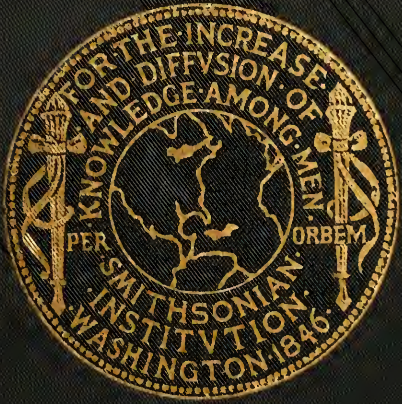
FOR THE INCREASE AND DIFFUSION OF KNOWLEDGE AMONG MEN
PER ORBEM
SMITHSONIAN INSTITUTION
WASHINGTON 1846

SHOUT
SHARE
IT

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM

BULLETIN 100
VOLUME 11

CONTRIBUTIONS TO THE BIOLOGY OF THE PHILIPPINE ARCHIPELAGO AND ADJACENT REGIONS

THE FISHES OF THE FAMILIES PSEUDOCHROMIDAE, LOBOTIDAE, PEMPHERIDAE, PRIACANTHIDAE, LUTJANIDAE, POMADASYIDAE, AND TERAPONIDAE, COLLECTED BY THE UNITED STATES BUREAU OF FISHERIES STEAMER "ALBATROSS," CHIEFLY IN PHILIPPINE SEAS AND ADJACENT WATERS

BY

HENRY W. FOWLER
Of the Academy of Natural Sciences of Philadelphia

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1931

For sale by the Superintendent of Documents, Washington, D. C. - - - - - - Price 60 cents

ADVERTISEMENT

The scientific publications of the National Museum include two series, known, respectively, as *Proceedings and Bulletin*.

The *Proceedings*, begun in 1878, is intended primarily as a medium for the publication of original papers, based on the collections of the National Museum, that set forth newly acquired facts in biology, anthropology, and geology, with descriptions of new forms and revisions of limited groups. Copies of each paper, in pamphlet form, are distributed as published to libraries and scientific organizations and to specialists and others interested in the different subjects. The dates at which these separate papers are published are recorded in the table of contents of each of the volumes.

The *Bulletins*, the first of which was issued in 1875, consist of a series of separate publications comprising monographs of large Zoological groups and other general systematic treatises (occasionally in several volumes), faunal works, reports of expeditions, catalogues of type-specimens, special collections, and other material of similar nature. The majority of the volumes are octavo in size, but a quarto size has been adopted in a few instances in which large plates were regarded as indispensable. In the *Bulletin* series appear volumes under the heading *Contributions from the United States National Herbarium*, in octavo form, published by the National Museum since 1902, which contain papers relating to the botanical collections of the Museum.

The present work forms No. 100, volume 11, of the *Bulletin* series.

Alexander Wetmore,
Assistant Secretary, Smithsonian Institution.

Washington, D. C., April 6, 1931

TABLE OF CONTENTS

Page

Introduction 1
Family Pseudochromidae 2
  Genus *Pseudogramma* 3
    polyacanthus 3
  Genus *Dampieria* 4
    cyclophthalma 5
    spiloptera 6
    trispilos 11
    melanotaenia 12
    melanostigma 16
    bitaeniata 18
    longipinnis 19
  Genus *Pseudochromis* 19
    purpurascens 22
    flavipinnis 22
    melanotaenia 23
    cyanotaenia 24
    tapeinosoma 24
    punctatus 25
    quinquedentatus 26
    aureus 27
    perspicillatus 27
    fuscus 28
    xanthochir 30
    rodwayi 32
    natalensis 33
    novae-hollandiae 33
    spencei 34
    persicus 35
    splendens 35
    nigrovittatus 36
    flavivertex 37
    olivaceus 37
    polynemus 38
    moorei 39
    caudalis 40
  Genus *Nematochromis* 41
    annae 41
  Genus *Pseudoplesiops* 42
    typus 42
Family Lobotidae 43
  Genus *Lobotes* 43
    surinamensis 44

Page
Family Pempheridae 45
- Genus *Parapriacanthus* 46
  - *ransonneti* 47
  - *beryciformes* 47
  - *güntheri* 48
  - *unwini* 48
  - *elongatus* 48
  - *argenteus* 49
- Genus *Pempheris* 49
  - *schwenkii* 50
  - *macrolepidotus* 51
  - *analis* 52
  - *klunzingeri* 52
  - *compressus* 53
  - *mexicanus* 54
  - *mangula* 55
  - *vanicolensis* 58
  - *oualensis* 59
  - *itoi* 61
  - *nyctereutes* 62
  - *sasakii* 62
  - *multiradiata* 63
- Genus *Leptobrama* 63
  - *mülleri* 64

Family Priacanthidae 64
- Genus *Priacanthus* 65
  - *cruentatus* 66
  - *arenatus* 69
  - *macracanthus* 70
  - *tayenus* 72
  - *hamrur* 74
  - *boops* 77
- Genus *Pseudopriacanthus* 79
  - *niphonius* 80

Family Lutjanidæ 81
- Genus *Glaucosoma* 82
  - *hebraicum* 83
  - *scapulare* 84
  - *fauvelii* 84
- Genus *Döderleinia* 85
  - *berycoides* 85
- Genus *Lutjanus* 86
  - *johnii* 90
  - *fuscescens* 94
  - *palmeri* 94
  - *nematophorus* 95
  - *argentimaculatus* 97
  - *semicinctus* 103
  - *decussatus* 104
  - *bohar* 107
  - *rivulatus* 111
  - *vaigiensis* 115
  - *lunulatus* 122

Family Lutjanidæ—Continued.

Genus *Lutjanus*—Continued.

Page
flavipes 123
monostigma 125
fulviflamma 128
lemniscatus 135
biguttatus 136
vitta 138
chrysotaenia 141
carponotatus 144
lineolatus 144
lutjanus 147
lineatus 148
rufolineatus 150
caeruleovittatus 152
duodecim lineatus 153
spilurus 153
kasmira 157
fulvus 162
luzonius 163
erythropterus 165
gibbus 168
malabaricus 174
sebae 176
Genus *Macolor* 178
niger 179
macularis 181
Genus *Apsilus* 182
fuscus 183
Genus *Tropidinius* 183
zonatus 183
Genus *Aprion* 184
virescens 185
Genus *Pristipomoides* 186
microdon 187
argyrogrammicus 189
microlepis 190
filamentosus 191
Genus *Etelis* 193
marshi 194
carbunculus 195
Genus *Aphareus* 196
furcatus 197
rutilans 198
Family Pomadasyidae 199
Genus *Gymnocaesio* 200
argenteus 201
Genus *Pterocaesio* 202
tile 202
Genus *Caesio* 203
xanthurus 204
lunaris 205
axillaris 207
xanthonotus 207
pisang 209

Family Pomadasyidae—Continued.
Genus *Caesio*—Continued- Page
chrysozonus 212
caerulareus 213
digramma 219
cuning 220
Genus *Pinjalo* 224
typus 224
Genus *Mirolabrichthys* 226
tuka 226
waitei 228
Genus *Parapristipoma* 229
trilineatum 229
Genus *Plectorhinchus* 231
nigrus 233
faetela 237
polytaenia 240
cinctus 241
albovittatus 242
orientalis 243
diagrammus 244
radja 249
goldmanni 249
lineatus 252
gaterinus 254
schotaf 255
chubbi 257
chaetodonoides 257
pictus 260
Genus *Hapalogenys* 267
meyenii 267
petersi 267
nigripinnis 268
kishinouyei 269
mucronatus 269
Genus *Scolopsis* 270
townsendi 273
eriomma 273
inermis 274
ghanam 275
xenochrous 276
margaritifer 277
taeniopterus 280
personatus 281
phaeops 282
cancellatus 283
bimaculatus 285
monogramma 286
longulus 288
trilineatus 290
frenatus 291
bilineatus 292
temporalis 296
vosmeri 298
ciliatus 300

Family Pomadasyidae—Continued.

Page
Genus *Pomadasys* 303
therapon 305
grunniens 305
guoraca 306
olivaceus 307
incisus 308
maculatus 309
argenteus 311
manadensis 313
hasta 313
opercularis 317
multimaculatus 318
striatus 319
stridens 319
furcatus 320
Family Teraponidae 322
Genus *Datnioides* 323
microlepis 323
polota 324
Genus *Terapon* 325
puta 328
jarbua 330
theraps 337
hilli 340
parviceps 341
kneri 341
micracanthus 342
bidyana 343
humeralis 344
cancellatus 345
rosenbergii 347
argenteus 347
lambertoni 350
alligatoris 351
elongatus 351
carbo 352
fuliginosus 352
bancrofti 353
percoides 353
caudavittatus 354
unicolor 355
plumbeus 357
Genus *Pelates* 358
quadrilineatus 359
sexlineatus 362
oxyrhyrchus 363
Genus *Helotes* 364
lorentzi 365
sexlineatus 365
Index 367

LIST OF ILLUSTRATIONS

Drawn by Richard Blossom Farley, except Nos. 7 and 28, which are by the author

Page

FIGURE 1. Dampieria melanotaenia (Bleeker). Variation of color markings ---- 14
2. Dampieria melanostigma, new species. Type ---- 16
3. Dampieria melanostigma, new species. Variation of color markings ---- 17
4. Dampieria bitaeniata, new species. Type ---- 18
5. Pseudochromis polynemus, new species. Type ---- 38
6. Pseudochromis moorei, new species. Type ---- 40
7. Pempheris itoi, new species. Type ---- 61
8. Priacanthus cruentatus (Lacépède). Young ---- 68
9. Priacanthus tayenus Richardson. Young ---- 73
10. Lutjanus nematophorus (Bleeker). Variation ---- 96
11. Lutjanus rivulatus (Cuvier). Young ---- 112
12. Lutjanus flavipes (Valenciennes). Variation of young ---- 124
13. Lutjanus spilurus (Bennett). Variation of color markings ---- 155
14. Lutjanus kasmira (Forskål). Variation of color markings ---- 157
15. Lutjanus erythropterus Bloch. Young ---- 166
16. Mirolabrichthys waitei, new species. Type ---- 228
17. Plectorhinchus nigrus (Cuvier). Young examples ---- 236
18. Plectorhinchus diagrammus (Linnaeus). Variation of color markings ---- 246
19. Plectorhinchus diagrammus (Linnaeus). Variation of color markings ---- 247
20. Plectorhinchus lineatus (Linnaeus). Variation of color markings ---- 253
21. Plectorhinchus chaetodonoides Lacépède. Variation of color markings ---- 259
22. Plectorhinchus pictus (Thunberg). Variation of color markings ---- 262
23. Plectorhinchus pictus (Thunberg). Variation of color markings ---- 264
24. Scolopsis bilineatus (Bloch). Young examples ---- 294
25. Terapon jarbua (Forskål). Variation of color markings ---- 331
26. Terapon jarbua (Forskål). Variation of color markings ---- 334
27. Terapon cancellatus (Cuvier). Variation of color markings ---- 346
28. Terapon lambertoni Fowler. Type ---- 350
29. Pelates quadrilineatus (Bloch). Variation of color markings ---- 359

THE FISHES OF THE FAMILIES PSEUDOCHROMIDAE, LOBOTIDAE, PEMPHERIDAE, PRIACANTHIDAE, LUTJANIDAE, POMADASYIDAE, AND TERAPONIDAE, COLLECTED BY THE UNITED STATES BUREAU OF FISHERIES STEAMER "ALBATROSS," CHIEFLY IN PHILIPPINE SEAS AND ADJACENT WATERS

By Henry W. Fowler
Of the Academy of Natural Sciences of Philadelphia

INTRODUCTION

In continuation of the study of the United States Bureau of Fisheries steamer *Albatross* collections, this paper represents the fourth installment in which I have been engaged. It includes the second part of the percoid series, the majority of which are valued market or commercial fishes. As in the preceding volumes, most of the localities relate to the Philippines, though the other localities in the Netherland Indies, China, Formosa, and Oceania visited by the *Albatross* are also included. The prefatory remarks of the other volumes as to the organization and personnel of the scientific staff under the direction of Dr. Hugh M. Smith apply equally well in the present work.

In Pseudochromidae the following are described as new:

Dampieria melanostigma, new species.
Bartschina, new subgenus---------------------------------------*Dampieria*.
Dampieria bitaeniata, new species.
Ogilbyina, new subgenus---------------------------------------*Dampieria*.
Devisina, new subgenus---------------------------------------*Pseudochromis*.
Klunzingerina, new subgenus---------------------------------*Pseudochromis*.
Pseudochromis splendens, new species.
Pseudochromis polynemus, new species.
Pseudochromis moorei, new species.

In Pempheridae:

Pempheris itoi, new species.

In Lutjanidae:

Lutjanus palmeri, new species.
Glabrilutjanus, new subgenus---------- *Lutjanus*.
Loxolutjanus, new subgenus---------- *Lutjanus*.
Macolor macularis, new species.

In Pomadasyidae:

Mirolabrichthys waitei, new species.
Ctenoscolopsis, new subgenus---------- *Scolopsis*.
Pomadasyina, new subgenus---------- *Pomadasys*.

In Teraponidae:

Leiopotherapon, new subgenus---------- *Terapon*.
Rhynchopelates, new subgenus---------- *Pelates*.

All the Indo-Pacific species known, pertaining to the families studied in this report, are included. Frequently some are only known from the original description, or perhaps a subsequent examination, or figure of the type. Others may be well established species but not represented in our collections. In all such cases both descriptions and figures are utilized in framing the descriptions for this report, as well as duly credited.

I have also included an examination of the installed materials of the present families in the general series of fishes in the United States National Museum, also such type specimens as may be involved. Similar materials in the Academy of Natural Sciences of Philadelphia are included in the same way.

In securing the services of Mr. Richard Blossom Farley for preparing the illustrations I feel fortunate in being able to present accurate and artistic figures. I am indebted to Mr. Barton A. Bean, of the Division of Fishes, United States National Museum, for supplying some items of data from the original records of the expedition.

Family PSEUDOCHROMIDAE

Body elongate, compressed. Head usually obtuse. Eyes lateral. Mouth moderate, mandible protruding. Maxillary exposed. Teeth uniserial laterally in jaws and outer enlarged row anteriorly; vomer and palatines toothed. Preopercle entire. Gill membranes united or cleft. No pyloric coeca. Air vessel present. Scales moderate, ctenoid or cycloid. Lateral line interrupted or in two sections, the anterior or upper extending high or up near base of dorsal fin. Dorsal single, with few spines anteriorly. Anal spines 3. Caudal rounded or truncate. Pectoral rays branched. Ventrals thoracic, with spine and 5 rays.

Small fishes allied with the serranids but readily distinguished by the reduced dorsal spines and interrupted lateral line. Found chiefly in the Indian Ocean and Malaysia.

ANALYSIS OF GENERA

a^1. PSEUDOGRAMMINAE. Scales ctenoid, moderate or about 50 in lateral series; palate with teeth; dorsal spines 7, pungent; anal rays 16 or 17.
Pseudogramma.

a^2. PSEUDOCHROMINAE. Scales ctenoid, palate usually with teeth; dorsal, anal, and ventral with spines, first with only 2 or 3 spines; anal rays 13 or 14.

b^1. Teeth on vomer, none on palatines; scales small, about 60 in lateral line.
Dampieria.

b^2. Teeth on vomer and palatines; scales moderate or large, 32 to 45 in lateral series.

c^1. Soft dorsal and anal with most rays branched; ventral rays branched. moderate--**Pseudochromis.**

c^2. Soft dorsal and anal with most all rays simple; ventral rays simple, elongated--**Nematochromis.**

a^3. PSEUDOPLESIOPSINAE. Scales cycloid; palate edentulous; no dorsal, anal, or ventral spines, often many dorsal rays simple--------------**Pseudoplesiops.**

Genus PSEUDOGRAMMA Bleeker

Pseudogramma BLEEKER, Verh. Akad. Wet. Amsterdam, No. 5, vol. 15. 1875, p. 24. Type *Pseudochromis polyacanthus* BLEEKER, monotypic.

Body oblong, compressed. Head acute. Mouth oblique, cleft not curved. Maxillary reaches slightly beyond hind eye edge. Teeth in several series in jaws, none canine-like; vomer and palatines toothed. Preopercle armed with small spine above. Branchiostegals 6. Scales ctenoid, moderate, 50 in lateral series. Jaws and cheeks scaly. Dorsal and anal bases scaly. Dorsal with 7 pungent spines and 19 to 21 rays; membranes of spinous fin notched. Anal with 3 spines and 16 or 17 rays. Ventrals inserted below pectoral bases, each with 5 rays, second ray longest.

PSEUDOGRAMMA POLYACANTHUS (Bleeker)

Pseudochromis polyacanthus BLEEKER, Nat. Tijds. Nederland. Indië, vol. 10, 1856, p. 375. Ternate.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 258 (copied).—KNER, Sitz. Ber. Akad. Wiss. Wien, Math.-nat. Kl., vol. 56, p. 717 (Fiji).—SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 16 (Viti Islands); No. 5, 1874, p. 26 (Viti Islands).—GÜNTHER, Journ. Mus. Godeffroy, vol. 5, pt. 11, 1876, p. 159, pl. 98, fig. A (Tahiti; Raiatea).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 523 (Tahiti); Occas. Pap. Bishop Mus., vol. 8, No. 7, 1923, p. 384 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 189 (Honolulu; Marcus Island; Tahiti).

Pseudogramma polyacanthus BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 24, pl. 3, fig. 2 (Ternate; Timor); Atlas Ichth. Ind. Néerland., vol. 9, 1877, pl. (1) 389, fig. 3.—STEINDACHNER, Abh. Senckenberg. Naturf. Ges., vol. 25, 1900, p. 428 (Batjan, Ternate).—BRYAN and HERRE, Occas. Pap. Bishop Mus., vol. 2, No. 1, 1902 (1903), p. 139 (Marcus Island).—REGAN, Trans. Linn. Soc. London, ser. 2, vol. 12, 1905, Zool., p. 227 (Amirante, Seychelles, in 25 to 35 fathoms).—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 119 (Ambon).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 266 (Lamakera; Kubala).

Pseudograma polyacantha FOWLER, Bull. Bishop Mus., No. 22, 1925, p. 37 (Tahiti). (Misprint.)

Depth 3 to 3⅕; head 2½ to 2⅔, width 1⅗ to 1⅞. Snout 4 to 5 in head from snout tip; eye 4 to 4⅓, greater than snout or interorbital; maxillary reaches well beyond eye, less so in young, expansion 1⅕ to 1¼ in eye, length 1⅞ to 2 in head from snout tip; teeth fine, small, in narrow bands in jaws, on vomer and palatines, none on tongue; interorbital 7 to 13, depressed or nearly level. Gill rakers 4+9, short, robust, equal gill filaments or ⅓ of eye.

Scales 36 to 40 in median lateral series between head and caudal base and 8 or 9 more on latter; 22 to 28 tubular scales in lateral line, which ends opposite middle of soft dorsal base; 5 scales above lateral line, 19 or 20 below, 32 to 34 predorsal forward midway in interorbital, 14 or 15 rows obliquely across cheek to preopercle edge. Maxillary scaleless, also preorbital, infraorbitals, snout and mandible. Scales with 11 basal radiating striae; circuli moderate.

D. VII, 19, I, third spine 3⅞ to 4 in total head length, twelfth ray 2⅗ to 3; A. III, 15, I, second spine 4⅛ to 4¾, tenth ray 2⅔ to 3⅘; caudal 1⅗ to 1⅔, convex behind; least depth of caudal peduncle 3 to 3½; pectoral 1⅔; ventral 2½ to 3.

Brown, scarcely paler below, with 6 ill-defined or obscure darker vertical bands on trunk and tail. Dusky brown blotch, but little smaller than eye, on opercle. Vertical fins all more or less dusky. Paired fins pale. Iris dusky.

Seychelles, East Indies, Philippines, Micronesia, Polynesia, Hawaii.

One example. Biri Channel. June 2, 1909. Length 54 mm.

Two examples. Cagayan Island, Cagayanes Islands, Jolo Sea. March 31, 1909. Length 38 to 41 mm.

22472. Little Santa Cruz, Zamboanga. May 26, 1908. Length 63 mm.

5732. Mahinog, Camiguin Island. August 3, 1909. Length 53 mm.

One example. Northwest Verde Island. July 22, 1908. Length 49 mm.

One example. Opol, Mindanao. August 4, 1909. Length 36 mm.

21572. Port Galera, Mindoro. October 27, 1909. Length 56 mm.

16542. Port Matalvi, Luzon. November 22, 1908. Length 37 mm.

12592. Rapurapu Island, Luzon. June 22, 1909. Length 44 mm.

One example. Tifu Bay, Boero Island, Dutch East Indies. December 10, 1909. Length 40 mm.

24138. Tomahu Island, Boero. December 12, 1909. Length 46 mm.

One example. Mabul Island, Borneo. September 29, 1909. Length 42 mm.

One example. Limbe Strait, Celebes. November 10, 1909. Length 35 mm.

14647. A. N. S. P. Tahiti. Length 57 mm.

Genus DAMPIERIA Castelnau

Dampieria Castelnau, Philadelphia Cent. Exhib. Offic. Rec. (Res. Fishes Australia), 1875, p. 30. Type *Dampieria lineata* Castelnau, monotypic.

Cichlops (not Hodgson 1844) Müller and Troschel, Horae Ichth., pt. 3, 1849, p. 24. Type *Cichlops cyclophthalmus* Müller and Troschel, monotypic.

Labracinus Bleeker, Verh. Kon. Akad. Wet. Amsterdam. No. 5, vol. 15, 1875, p. 2 (name in synonymy). Type *Cichlops cyclophthalmus* Müller and Troschel, monotypic.

Body oblong, strongly compressed. Head obtuse, convex above. Mouth moderately oblique, curved. Teeth in several rows in jaws, outer row somewhat enlarged. Vomer toothed, palatines edentulous. Preopercle edentulous. Branchiostegals 6. Scales ctenoid, small, about 60 in lateral line. Opercles scaly. Dorsal and anal bases scaly. Dorsal with 2 spines and 24 to 26 rays. Anal about half as long as dorsal, spines 3 and rays 14 or 15. Caudal obtuse. Pectoral obtusely rounded. Ventral with spine and 5 rays, third ray longest.

Species of the Indo-Pacific, the largest and most handsome of the family.

ANALYSIS OF SPECIES

a^1. Dampieria. Caudal rounded, moderately long, ⅕ to ⅓ in rest of body; 60 to 80 scales in median lateral series.
  b^1. Body without blackish longitudinal lines.
    c^1. Soft dorsal without black basal blotch.
      d^1. Soft dorsal uniform posteriorly........................**cyclophthalma.**
      d^2. Soft dorsal with longitudinal blue lines and bars posteriorly. **spiloptera.**
    c^2. Soft dorsal with black basal blotch anteriorly................**trispilos.**
  b^2. Body with blackish longitudinal lines, sometimes few, though never absent.
    e^1. Soft dorsal without black basal blotch................**melanotaenia.**
    e^2. Soft dorsal with variable black basal blotch, often large. **melanostigma.**
a^2. Caudal ends in median point behind; scales 50 to 55 in median lateral series.
    f^1. Bartschina, new subgenus. Caudal less than head in length; two broad dark longitudinal bands..................**bitaeniata.**
    f^2. Ogilbyina, new subgenus. Caudal greater than head, about ⅖ of body length to caudal base; coloration uniform......**longipinnis.**

Subgenus DAMPIERIA Castelnau

Caudal rounded, moderately long, ⅕ to ⅓ in rest of body; 60 to 80 scales in median lateral series.

DAMPIERIA CYCLOPHTHALMA (Müller and Troschel)

Cichlops cyclophthalmus Müller and Troschel, Horae Ichth., pt. 3, 1849, p. 24, pl. 4, fig. 1. Sunda Sea.—Günther, Cat. Fish. Brit Mus., vol. 2, 1860, p. 259 (compiled).—Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 8, pl. 2, fig. 2 (Manado, Celebes); Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, pl. (1) 390, fig. 8.

Cichlops cyclothalma Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, 1902, p. 491 (compiled).

Cichlops japonicus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1859, p. 147. Japan.

Depth 2⅞; head 3⅒, width 1¾. Snout 4 (in profile) in head from snout tip; eye 3¾, greater than snout; maxillary reaches slightly beyond front eye edge, expansion 1¾ in eye, length 2⅖ in head from snout tip; bands of fine teeth in jaws, with 2 to 4 external curved canines anteriorly; partly semilunar narrow band of fine teeth on vomer; interorbital low.

Scales 62 in lateral series to caudal base (figure shows about 57 with 10 more on caudal base); tubular scales (in figure) 42 in upper section of lateral line and 20 in lower section to caudal base; 5 scales above lateral line, 18 below, about 22 predorsal forward over hind nostril, 5 rows on cheek to preopercle ridge. Bases of dorsals, anals and pectorals with few small scales; basal half of caudal with fine scales.

D. II, 24, second spine 4¾ in total head length, twentieth ray 1⅓; A. III, 14, i, third spine 5⅕, tenth ray 1⅖; caudal 1⅓, convexly rounded behind; least depth of caudal peduncle 2; pectoral 1⅓; ventral 1⅖.

Body rosy or red, back and sides posteriorly more or less with dusky tint. Fins rosy, vertical narrowly edged with bluish. Dorsal over greater anterior portion sparsely dotted with purplish. (Bleeker.)

East Indies, Japan. Bleeker had but one example 125 mm. long. His figure shows a blue line from above the nostrils along and around hind eye edge, then forward to middle of upper lip. The muzzle and cheek are also shown with other parallel blue lines.

DAMPIERIA SPILOPTERA (Bleeker)

Cichlops spilopterus Bleeker, Nat. Tijds. Nederland. Indië, vol. 5, 1853, p. 168. Macassar.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 259 (copied).—Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 11, pl. 1, fig. 4 (Celebes, Sangi, Batjan, Waigiu); Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, pl. (1) 390, fig. 9.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 28 (North Celebes).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 265 (Karkaralong Island; Elat, Long Key; Feer, High Key; Pepela Bay, Rotti; Lamakera, Solor).

Cichlops spiloptera Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 261 (Fuga Island and Calayan).

Dampieria spiloptera Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 189 (copied Bleeker).

Cichlops hellmuthii Bleeker, Nat. Tijds. Nederland. Indië, vol. 6, 1854, p. 329. Larentuka, Flores.

Cichlops hellmuthi Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 12, pl. 1, fig. 6 (Obi major, Flores, Letti, Waigiu); Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, pl. (1) 390, fig. 4.

Dampieria hellmuthii Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 189 (on Bleeker).

Depth 2⅔ to 3; head 3 to 3⅔, width 1⅔ to 3⅒. Snout 3½ to 3⅔ in head from upper jaw tip; eye 3½ to 4¼, equals snout in young to

1⅕ in snout with age, greater than interorbital in young to 1⅙ in interorbital with age; maxillary reaches eye, little inclined from vertical, expansion 1⅕ to 2¾ in eye, length 2⅛ to 2½ in head from snout tip; 4 canines in front of each jaw, of which lower lateral pair posterior; teeth in villiform bands in jaws, with outer enlarged series laterally; narrow band of villiform teeth across vomer; interorbital 3⅘ to 6 in head, convex. Gill rakers 6+12, cuneate, short.

Tubular scales 53 or 54 in upper section of lateral line, 13 to 18+2 or 3 in lower section; 7 or 8 scales above lateral line, 19 or 20 below, 28 to 30 predorsal; 9 vertical rows of scales on cheek. Scales with 14 to 18 basal radiating striae; apical denticles 92 to 100, with single row of basal elements; circuli very fine.

D. II, 25 i, second spine 4⅛ to 4¾ in total head length, twenty-third ray 1⅛ to 1⅖; A. III, 14, i, third spine 4⅛ to 4⅕, twelfth ray 1¼ to 1¾; least depth of caudal peduncle 1¾ to 2⅓; pectoral 1⅛ to 1⅓; ventral 1¼ to 1⅓; caudal 3 to 3⅛ in combined head and body, convex behind.

Vandyke brown to burnt umber, with dozen oblique brown lines on cheek. Iris brown. Dorsals deep umber, front of soft fin finely dotted with neutral dusky or blackish anteriorly and greater portion of fin with oblique neutral black lines, inclined backward. Anals deep umber, with some obscure longitudinal darker parallel lines. Caudal deep umber, obscurely mottled with dark, edges pale all around. Paired fins dull brown, with large dusky blotch usually at pectoral origin.

East Indies. Many examples show the middle of the side dull yellowish-brown and the tail with 9 or 10 longitudinal deep brown bands, following medianly or alternately the rows of scales. The oblique dark lines on the soft dorsal are quite variable, sometimes even parallel longitudinally with fin margin, or the lower may each end in rather a large blackish blotch on greater portion of subbasal median extent of fin. The anterior membranes of the soft dorsal may be crowded with white dots. Some examples have the vertical fins uniformly pale, while in others they may be pale with narrow blackish edge all around. Many are without a pale median lateral area or each scale of the anterior portion of the body may have a deep brown spot, when the posterior longitudinal dark bands are usually obsolete or absent. The dark blotch at the pectoral origin is variably large, obscure, to very small or absent. Often the greater posterior portion of the body and most all the fish may even be light yellowish. Some pale examples have a blackish basal line all along the soft dorsal.

My examples corresponding to the nominal *Cichlops hellmuthii* Bleeker are all largely uniform or without connected longitudinal dark lines. Many are quite dark or dusky and evidently melanistic.

Others are very finely spotted, though the spots never forming distinct longitudinal lines.

5182, 7681 to 7683, 16284. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 95 to 143 mm.

11948. Alimango Bay, Burias Island. March 5, 1909. Length 130 mm.

16743. Baganga Island. May 13, 1908. Length 110 mm.

9280. Basot Island, Pocket Bay, Luzon. June 11, 1909. Length 114 mm.

9299, 16362, 21226, 21865 to 21867. Biri Channel, Luzon. June 1, 1909. Length 100 to 130 mm.

9296, 9937 to 9940, 14904 to 14907, 17586. Biri Channel. June 2, 1909. Length 109 to 145 mm. 14 examples.

16109. Bolalo Bay, Malampaya Sound, Palawan. December 21, 1908. Length 197 mm.

7252, 7253. Busbus Point, Siasi Island. September 20, 1909. Length 125 to 139 mm.

7101, 22790, 22791. Busin Harbor, Burias Island. March 8, 1909. Length 127 to 140 mm.

11070, 14542, 17186, 18722. Butauanan Island, Luzon. June 13, 1909. Length 129 to 160 mm.

18997. Cagayan, Sulu. June 8, 1909. Length 178 mm.

14984 [1362]. Calangaman Island, between Leyte and Cebu. March 16, 1909. Length 182 mm. General color of head and shoulders deep olivaceous with smoky orange spots. Scarlet of side in large blotch extending across belly. Dorsal margin light blue over orange, scarlet shades at basal portion of central part of fin; spots on membranes brown in front edged with orange, become darker posteriorly and as very dark diagonal bands on hind part of fin. Caudal margin blue over submarginal olive, rest of fin blackish like caudal peduncle and adjacent part of body. Anal margin blue, scarlet shades at base and general color like dorsal. Pectoral rays clear. Ventral membranes scarlet.

12953. Candaraman Island, north Balabac Strait. January 4, 1909. Length 164 mm.

8713, 1173, [12735]. Capulaan Bay, Pagbilao, Chica Island. February 24, 1909. Length 138 to 150 mm. Head and anterior body olive; stripes slaty-blue, becoming obscure in red central area; in general blue stripes occupy center of scale rows and slightly narrower than interspaces below. Spots on anterior dorsal vermilion; irregular black and red bars on posterior dorsal; no bluish blotches on front of dorsal; red diagonal stripes on anal most distinct at base.

14836, 14837. Casagoran, Malhon Island. July 27, 1909. Length 98 to 110 mm.

13019. Cataingan Bay. April 17, 1908. Length 179 mm.

16851. Cataingan Bay. April 18, 1908. Length 153 mm.

5619. Caxisigan Island, North Balabac Strait. January 2, 1909. Length 175 mm.

7575. Cebu market. April 6, 1908. Length 183 mm.

7826, 7827. Cebu market. April 7, 1908. Length 152 mm. 2 examples.

18277, 18278. Galera Bay. June 9, 1908. Length 134 to 150 mm.

One example. Grande Island Reef. January 8, 1908. Length 68 mm.

14441. Gubat, Sorsogon, Luzon. June 23, 1909. Length 123 mm.

10904 to 10907. Isabela, Basilan Island. September 11, 1909. Length 120 to 147 mm.

16554, 16555, 16558, 16560, 18554, 22059. Langao Point, Luzon. June 24, 1909. Length 78 to 142 mm.

17530. Lampinigan Island, south of Zamboanga. September 11, 1909. Length 130 mm.

14838. Little Santa Cruz, Zamboanga. May 26, 1908. Length 112 mm.

5142, 6661, 6662, 21041. Little Santa Cruz. May 28, 1908. Length 106 to 130 mm.

16971, 16972 [1334], 14666. Lode Bay, Destacado Island, March 13, 1909. Length 134 mm. 2 examples. General color very deep smoky chocolate; on cheek under eye brick-red stripes and on opercle spots of same color; on back and side, except over scarlet blotch, rows of dark smoky blue spots following scale rows; one spot on a scale; large bright scarlet blotch, diameter greater than length of pectoral on side; dorsal with many spots on membranes, very dark brown in anterior part and deep smoky bluish posteriorly; soft dorsal with line of blue on margin; anal with similar line of blue on margin over dark brown; no other spots or stripes on anal, general color blackish; caudal blackish without markings; pectoral very dusky without markings, also ventrals; upper margin of iris very dark blue, center red, posterior margin yellow.

11234. Mactan Island, Cebu. March 25, 1909.

24570, 16712. Maculabo Island, Luzon. June 14, 1909. Length 154 to 159 mm.

12156 [939]. Malcochin Harbor, Linapacan Island. December 19, 1908. Length 205 mm. Head blackish brown with olive reflections, posteriorly more distinctly black; through middle of body pale or crimson area, extending from lateral line to ventral surface; posteriorly to this red color continues, merging into black; on this about 7 black stripes appear; on anterior portion stripes very indistinct; across cheek four or five oblique dark stripes, about three across preorbital; interspace between these somewhat orange; dorsal body color, dashes of black, showing small spots anteriorly, fusing into larger oblique bars posteriorly; caudal black with margin yellowish; few black spots and dashes on fin may be seen by transmitted light; anal black, showing crimson by transmitted light, margin narrowly blue; ventrals pale, orange stripe through each membrane; pectoral rays dusky, membranes hyaline; iris reddish.

16186. Mantacao Island. April 8, 1908. Length 145 mm.

11227. Mantaquin Bay, eastern Palawan. April 2, 1909. Length 122 mm.

17636, 18618 [1197], 18619 [1194]. Mompog Island. March 3, 1909. Length 132 to 138 mm. In 1197 distinct bars in middle portion of back. First yellowish above middle of pectoral, then 3 or 4 darker bars alternated with yellowish or paler, then ground color. In 1194 no black blotch in front of dorsal.

7489, 7490, 21372. Murcielagos Bay, Mindanao. August 21, 1909. Length 130 to 168 mm.

4337 [D. 5337]. Observatory Island, S. 80° E., 13.8 miles (11° 34′ N., 119° 26′ E.). December 20, 1908. Length 147 mm.

17, 17657, 18816. Pandanon Island. March 23, 1909. Length 114 to 162 mm.

21440. Panpan, Tara Island. September 20, 1909. Length 140 mm.

21556. Pilas Island. September 12, 1909. Length 135 mm.

9272, 10358. Port Jamelo, Luzon. July 13, 1908. Length 132 to 155 mm.

20531. Port Galera. October 27, 1909. Length 142 mm.

19137. Port Langcan, Dumaran Island. April 7, 1909. Length 168 mm.

7800. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 130 mm.

13199. Quinalasag Island, Luzon. June 12, 1909. Length 150 mm.

13360. Sablayan. December 12, 1908. Length 128 mm.

18644, 18645. Saboon Island, Ragay Gulf, Luzon. March 10, 1909. Length 121 to 130 mm.

18156. San Miguel Harbor, Masbate Island. April 21, 1908. Length 150 mm.

14015. Santo Domingo, Batan Island. November 7, 1908. Length 142 mm.

11328. San Roque, Leyte. July 29, 1909. Length 174 mm.

17973. Simaluc Sibi Sibi Island. September 23, 1909. Length 130 mm.

19544 to 19547, 21875, 21876. Singaan Island, between Jolo and Tawi Tawi. September 21, 1909. Length 100 to 138 mm.

22758. Sitanki Reef. September 21, 1909. Length 113 mm.

17670, 17671. Sitanki Reef. September 24, 1909. Length 120 to 128 mm.

20056, 20057. South lagoon, Tumindao Reef, Tawi Tawi Group. February 26, 1908. Length 110 to 120 mm.

4890, 4891, 4893, 4894. Talajit Island, between Samar and Masbate. March 15, 1909. Length 170 to 208 mm.

4639, 4640, 4661, 4662. Tambun Sigambul, Tonquil Island. September 14, 1909. Length 124 to 148 mm.

19018, 19019, 19221, 19222, 21901 [1921], 22266. Tapiantana Island, south of Zamboanga. September 13, 1909. Length 103 to 145 mm. Vermilion, top of head olive, side similar but somewhat smoky, becoming slaty below; cheek and opercle with rows of orange spots; back and upper side with small olive spot in each scale, occupying most of scale on back anteriorly becoming fine dots below and posteriorly. Dorsal with narrow blue edge, body uniform vermilion with undulating narrow bars of darker, breaking into spots on anterior portion; no spots on tail or anal; paired fins orange, breast dusky, edges of scales rather orange about pectoral base; no black spot on dorsal.

9523, 9525. Tara Island, Mindoro Strait. December 15, 1908. Length 148 to 183 mm.

14679. Tataan, Simulac Island, Tawi Tawi Group. February 21, 1908. Length 140 mm.

12384. Tataan. February 21, 1908. Length 147 mm.

6842 [148]. Tataan. February 19, 1908. Length 148 mm.

10464, 18958. Tilig, Luzon. July 14, 1908. Length 120 to 145 mm. Smaller with 6 oblique dark bars on back above.

9433. Tulayan Island, Jolo. September 15, 1909. Length 148 mm.

9470, 9471, 9472. Tumindao Island. February 26, 1908. Length 102 to 141 mm.

14421. Ulugan Bay, Rita Island, Palawan. December 29, 1908. Length 105 mm.

6434. West coast of Palaui Island, north Luzon. November 18, 1908. Length 133 mm.

14394, 14422. Talisse Island, north of Celebes, Dutch East Indies. November 9, 1909. Length 115 to 117 mm.

20788, 20789. Kapoposang Island, Macassar Strait. December 28, 1909. Length 113 to 115 mm.

13218. Doworra Island. December 2, 1909. Length 139 mm.

12954. Buka Buka Island, Celebes. November 20, 1909. Length 145 mm.

21120. Cape Kait, Celebes. December 29, 1909. Length 102 mm.

15789. Sabtan Island. November 9, 1909. Length 114 mm.

13068. Gomomo Island, Pitt Passage. December 3, 1909. Length 118 mm.

11163. Nan Wan Bay, Formosa. January 25, 1910. Length 130 mm.

71977. U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection 1906. Length 59 to 120 mm. 11 examples.

72162 U.S.N.M. Fuga Island, Philippines. R. C. McGregor. Length 185 mm.

DAMPIERIA TRISPILOS (Bleeker)

Cichlops trispilos Bleeker, Nat. Tijds. Nederland. Indië, vol. 9, 1855, p. 110. Sahu, Halmaheira.

Cichlops trispilus Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 10, pl. 3, fig. 5 (Halmahera, Ternate, Batjan, Guebe); Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, pl. (1) 390, fig. 2.

Labracinus trispilos Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 95 (Bacon).

Depth 2¾ to 3⅓; head 2⅞ to 3⅔, width 1⅘ to $2\frac{1}{10}$. Snout 3⅗ to 4 in head from upper jaw tip; eye 3⅘ to 4½, 1 to 1⅕ in snout, slightly larger than interorbital in young to subequal with age; maxillary vertically inclined, extends little beyond front eye edge or to pupil, expansion 1⅘ to 2½ in eye, length 2⅛ to 2⅗ in head from snout tip; 4 variable canines in front of each jaw; teeth in villiform bands in jaws, outer row little enlarged; narrow band of fine teeth across vomer; interorbital 4½ to 6, convex. Gill rakers 7 or 8+12 to 14, lanceolate, short.

Scales with 52 to 58 tubes in upper section of lateral line, 16 to 18+2 or 3 in lower section; 6 or 7 scales above lateral line, 18 to 20 below, 24 to 26 predorsal; cheek with 7 to 10 rows of scales. Scales with 10 to 16 basal radiating striae; apical denticles 38 to 56, with 1 or 2 rows of basal elements; circuli very fine.

D. II, 25, I or 26, I, second spine 4 to 5⅕ in total head length, twenty-third ray 1⅛ to 1⅗; A. III, 14, I, third spine 4⅛ to 5, twelfth ray 1⅕ to 1⅗; caudal 1 to $1\frac{1}{10}$ or 3 to 3⅓ in rest of body, convex behind; least depth of caudal peduncle 1⅘ to $2\frac{1}{10}$ in total head length; pectoral 1¼ to 1⅖; ventral $1\frac{1}{10}$ to 1¼.

Tawny olive to cinnamon, more or less uniform, often hind portion of body uniform. About a dozen oblique bands or lines of darker on cheek and opercles with rather large brown spots. Predorsal finely spotted with darker. Iris brown. Fins grayish to pale buff or yellowish, vertical ones frequently with dusky edge. Dorsal finely dotted anteriorly with deep gray, posteriorly with longitudinal gray lines and subbasal black median blotch over 2 to 4 membranes; anal with 4 or 5 longitudinal deep gray lines. Paired fins immaculate, pale brownish or grayish, pectoral often with dusky blotch at origin. Lower surface of head and chest sometimes grayish, dusky or smoky brown.

East Indies and Philippines.

9297, 9298, 9300, 16361, 22127, 23728. Biri Channel, Balicuatro Islands. June 1, 1909. Length 89 to 160 mm. One with isopod crustacean in mouth.

14902, 14903, 14908. Biri Channel. June 2, 1909. Length 111 to 160 mm.

4638. Bubuan Island, Jolo. February 14, 1909. Length 146 mm.

17191. Butauanan Island, Luzon. June 13, 1909. Length 151 mm.

One example. [1083.] Cagayan, Sulu. January 8, 1909. Length 108 mm.

15275 [1330], 17481 [1318]. Canmahala Bay. March 11, 1909. Length 148 to 173 mm. Very dark olive green; stripes slaty on anterior body and back; orange on side of head made up of dots on each scale in both cases; posterior soft verticals blue-black, red central area on body distinct; dorsal marked as usual but comma-shaped marks of posterior dorsal missing, all of dots being uniformly round or short bars across membranes and second to fifth or sixth membranes of spinous dorsal showing dusky blotch near base when viewed by transmitted light.

22734. Dumaca River, Luzon. February 25, 1909. Length 137 mm.

17091. Dupon Port, Leyte. March 17, 1909. Length 169 mm.

9697. Endeavor Strait, Palawan. December 22, 1908. Length 144 mm.

144, 13350, 16552, 16553, 16557, 16559. Langao Point, Luzon. June 24, 1909. Length 114 to 164 mm.

16969, 16970. Lode Bay, Destacado Island. March 13, 1909. Length 123 to 172 mm. [1336.] General color olivaceous; lines of light scarlet on cheek below eye and spots on opercle; dorsal very deep smoky, with blue-black spots on membranes; caudal deep smoky, unmarked; anal almost black, margin blue; dorsal with very narrow submargin of light scarlet; pectoral very dusky, ventrals more so; bright scarlet below middle of side; back smoky olivaceous. 1337. General color of head smoky olivaceous, very dark above, lighter below; posterior part of body from point of anal brilliant scarlet; rows of spots over scale rows on back and upper part of side, reaching back as far as base of 18th or 20th dorsal ray; these spots somewhat circular in shape, very deep smoky blue, one on each scale; dorsal deep scarlet; two blackish spots larger than pupil, occupying centers of membranes between first and second or second and third rays; upper part of dorsal with wavy lines of deeper red, breaking into dots in anterior portion, margin of dorsal deep blue; caudal scarlet, margined with blue, no other markings; pectoral translucent brick red; ventrals light wine, anterior margin blue.

12280, 12281. Masbate Reef, Masbate. April 20, 1908. Length 166 to 173 mm.

9338. Matnog Bay, Luzon. May 31, 1909. Length 105 mm.

Nineteen examples. Pasacao, Ragay Gulf, Luzon. March 8, 1909. Length 28 to 41 mm.

18154, 18155. San Miguel Harbor, Ticao Island. April 21, 1908. Length 158 to 166 mm.

4889. Talajit Island, Buang Bay. March 15, 1909. Length 201 mm.

9524. Tara Island. December 15, 1908. Length 125 mm.

9696, 14400, 14420. Talisse Island, north of Celebes, Dutch East Indies. November 9, 1909. Length 119 to 139 mm.

19948, 22691, 22692. Gane Road, Gillolo Island. December 1, 1909. Length 113 to 133 mm.

13067, 13069. Gomomo Island. December 3, 1909. Length 114 to 138 mm.

11164. Nan Wan Bay, Formosa. January 25, 1910. Length 148 mm.

56053 U. S. N. M. Bacon. Bureau of Fisheries (4216). Length 37 mm.

DAMPIERIA MELANOTAENIA (Bleeker)

Cichlops melanotaenia Bleeker, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. 765. Macassar.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 259 (copied).—Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 7, pl. 2, fig. 3 (Banka, Celebes, Sangi); Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, pl. (1) 395, fig. 5.—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 261 (Cuyo).

Labracinus melanotaenia Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 95 (Bulan).

Dampieria melanotaenia Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 275 (Philippines).

Cichlops melanotaenia var. *altera* Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 8. East Indies.

Depth 2¾ to 2⅘; head 3⅕ to 3⅖, width 1¾ to 2. Snout 3½ to 3⅞ in head from upper jaw tip; eye 4⅓ to 4⅗, 1⅛ to 1⅙ in snout, 1 to 1⅛ in interorbital; maxillary little inclined from vertical, nearly reaches opposite pupil, expansion 1⅘ to 2 in eye, length 2⅕ to 2½ in head from snout tip; 4 canines in front of each jaw, variably 5 above and after lower laterals variably of from 1 to 3 teeth; band of villiform teeth in each jaw, with outer row of little enlarged teeth; narrow band of villiform teeth across vomer; interorbital 4 to 4½, convex. Gill rakers 7+12, lanceolate, robust.

Scales 48 to 50 tubular in upper section of lateral line, 14 to 17+2 or 3 in lower section; 6 scales above lateral line, 18 below, 26 to 28 predorsal; 8 or 9 vertical rows of scales on cheek. Scales with 15 or 16 basal radiating striae; apical denticles 60 to 79, with 1 or 2 rows of basal elements; circuli fine.

D. II, 25, I, second spine 4 to 4⅕ in total head length, twenty-third ray 1⅒ to 1⅕; A. III, 14, I, third spine 4⅒ to 4½, twelfth ray 1⅕ to 1⅖; least depth of caudal peduncle 1⅔ to 2; pectoral 1⅙ to 1⅕; ventral 1⅒ to 1⅛; caudal 2¾ to 3 in combined head and body, convex behind.

General color burnt umber, little lighter below. Side of head, especially on cheek, with about dozen oblique deep brown lines. Brown arc along upper hind eye edge narrowly. Hind portion of trunk and tail with 9 or 10 horizontal black lines, along median portion of scale rows, alternating a scale row. Sometimes these lines all more or less obliterated or absent. Fins usually pale or very light brown. Dorsals with dusky dots anteriorly soon giving place to longitudinal lines posteriorly and edges of fins narrowly dusky; along dorsal basally, irregularly or alternating one to several membranes a dusky bar or blotch. Anals pale, with faint longitudinal gray lines, edge narrowly dusky gray brown, often largely pale basally and edge narrowly dusky. Paired fins pale, sometimes more gray to dusky blotch at origin of pectoral.

East Indies, Philippines.

11944, 11945, 17711. Alimango Bay, Burias Island. March 5, 1909. Length 155 to 185 mm. Body bright vermilion, stripes jet black. On top of head green becomes olive and spots slaty; on side of head stripes orange-brown, interspaces olivaceous; chin and lower head smoky olive. Vertical fins bright vermilion, with more crimson shade than body; dorsal edge narrowly black, fin bluish with black blotch near base antero-medially; caudal tip blackish: fins spotted in front and brokenly barred behind with darker vermilion, showing distinctly only by transmitted light; anal obscurely barred in same manner; no bars on caudal. Paired fins more orange; pectoral black on upper base.

16110. Bolalo Bay, Palawan. December 21, 1908. Length 222 mm.

10677 [94]. Bubuan Island, Jolo. February 14, 1908. Length 162 mm. Generally saffron umber. Yellowish bar from dorsal down to middle of pectoral dividing upper side of body; posterior area with narrow black lines, defined by pale edges; anterior area with blue-green centers to scales forming irregular rows of dots, fusing as stripes across cheek; below yellowish bar black stripes extend slightly nearer head and lower 4 broken on left side; first black line along base of dorsal, breaking into branches on dorsal and ending on caudal peduncle; second immediately above lateral line and ends with same; fourth ends at hind dorsal edge, next four end at base of caudal, ninth and tenth at hind anal edge and all stripes equidistant. Head and breast slaty scarlet, abdominal region more purely scarlet, merging into orange along lower side. Chin and lower head dark slaty; top of head slate with indistinct brown markings. Iris red brown, with narrow golden inner ring. Dorsal brilliant scarlet, short paler bars across membranes of last three-fourths of fin; on first 7 membranes red segregated into numerous small dots; scales of base dusky yellowish-green and dash of same color on soft part of fin near hinder edge; entire fin narrowly edged with bright blue. Caudal brilliant scarlet, with dusky green shades in central region and tipped with brilliant blue. Anal bright scarlet, tipped with blue. Pectoral bright greenish yellow, somewhat orange at tip, base color of adjoining region and black blotch on upper edge of base. Ventral rays greenish yellow, membranes with orange scarlet stripes.

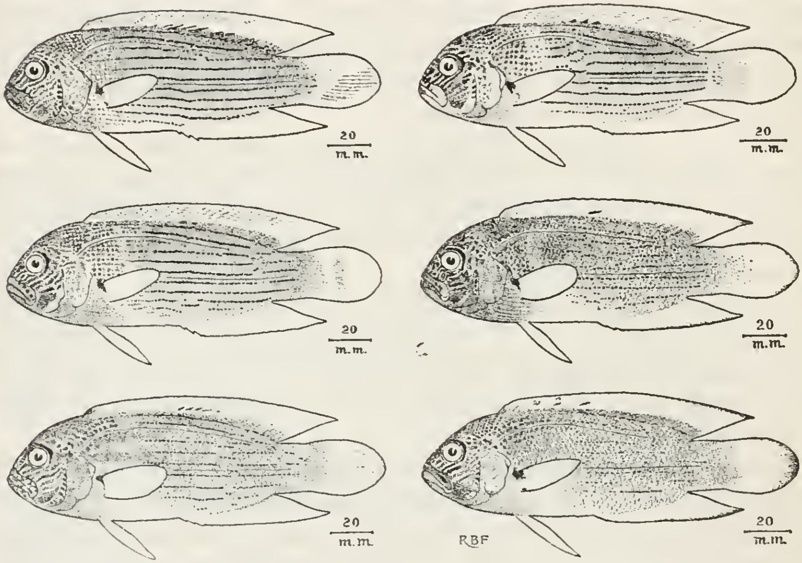

Figure 1.—Dampieria melanotaenia (Bleeker). Variation of color markings

4892. Buang Bay, Talijit Island. March 15, 1909. Length 202 mm. Four examples show marked variation in black dorsal blotch, from nothing to twice eye diameter. Fin otherwise very similar in each example; vermilion specks on front part of fin smaller and more numerous in some than in others and short stripes similar in same respects. Black stripes on side show brokenly in one specimen only, not present in others, otherwise color not different.

16781. Busin Harbor, Burias Island. March 7, 1909. Length 145 mm.

18996. Cagayan, Sulu. June 8, 1909. Length 193 mm.

12956. Candaraman Island, North Balabac Strait. January 4, 1909. Length 180 mm.

5616, 5617 [1006]. Caxisigan Island, North Balabac Strait. January 2, 1909. Length 145 to 207 mm. Scarlet, eye, head and entire back with crimson shades; stripes on cheek somewhat slaty; spots on top of head less so; body stripes pure black; extreme edge of anal and dorsal and tip of caudal black; dorsal and anal with many narrow bars vermilion, showing best by transmitted light; break into round spots on the dorsal to seventh or eighth membranes.

10901 to 10903. Isabela, Basilan Island. September 11, 1909. Length 154 to 180 mm.

17529. Lampinigan Island, south of Zamboanga. September 11, 1909. Length 172 mm.

6660. Little Santa Cruz Island. May 28, 1908. Length 145 mm.

15797, 16922. Makesi Island, Palawan. April 5, 1909. Length 180 to 186 mm.

10817. Murcielagos Bay, Mindanao. August 20, 1909. Length 158 mm.

17656. Pandanon Island, between Cebu and Bohol. March 23, 1909 Length 132 mm.

21553 to 21555, Pilas Island, south of Zamboanga. September 12, 1909. Length 135 to 156 mm.

2618 [D. 5407]. Ponson Island, S. 76° E., 12.2 miles (10° 51′ 38″ N. 124° 20′ 54″ E.). March 17, 1909. Length 185 mm.

6500. Port Caltom, Busuanga Island. December 15, 1908. Length 190 mm.

18714. Port Dupon, Leyte. March 17, 1909. Length 167 mm.

17115. Simaluc Sibi Sibi Island, north of Tawi Tawi. September 23, 1909. Length 162 mm.

12602. Sitanki, Sulu Archipelago. February 26, 1908. Length 138 mm.

17667, 17672, 17673. Sitanki Reef. September 24, 1909. Length 123 to 162 mm.

20720. Tambun Sigambul, Tonquil Island. September 14, 1909. Length 118 mm.

9526. Tara Island. December 15, 1908. Length 176 mm.

6844, 6845. Tataan Bay, Simulac Island, Tawi Tawi. February 19, 1908. Length 147 to 161 mm. Front part yellowish olive green, caudal peduncle dark slate, arc from lateral line toward middle of anal and ventral base including abdominal region bright pink, shading through vermilion to darker of posterior part; centers of scales above pectoral base to front of dorsal dark purplish, forming interrupted rows. Across side of head several narrow orange stripes, one below eye approaching scarlet; breaking into roundish spots on opercle. Iris scarlet, with golden. Dorsal like adjacent body, front part with small crimson lake round dots, changing to longitudinal dashes of black in hinder portions; edge of entire fin narrowly blue, below on soft dorsal posteriorly orange and yellow shades. Caudal slaty black, edge lemon yellow with narrow line of slate blue. Anal slate black, edge narrow bright blue and base with vermilion dashes from body color. Pectoral pale olive green, axis light dusky. Ventral yellow and orange.

18599. Tulnalutan Island, east of Zamboanga. September 9, 1909. Length 168 mm.

9573. Tumindao Island, Sulu Archipelago. February 26. 1908. Length 170 mm.

6651, 7917. Tutu Bay, Jolo. September 19, 1909. Length 140 to 186 mm.

48739. A. N. S. P. Philippines. Commercial Mus. Phila. Length 90 mm.

DAMPIERIA MELANOSTIGMA, new species

Depth $2\frac{4}{5}$ to $3\frac{1}{8}$; head $3\frac{1}{4}$ to $3\frac{3}{5}$, width $1\frac{3}{4}$ to $2\frac{1}{10}$. Snout $3\frac{1}{4}$ to 4 in head from upper jaw tip; eye 4 to $4\frac{1}{8}$, 1 to $1\frac{1}{4}$ in snout, greater than interorbital in young to subequal with age; maxillary reaches eye, vertically inclined, expansion $1\frac{3}{4}$ to $2\frac{1}{6}$ in eye, length $2\frac{1}{6}$ to $2\frac{1}{2}$ in head from upper jaw tip; 4 canines in front of each jaw, variable, sometimes only 3 above and median lateral sometimes as several well developed one on side of jaw; teeth in villiform bands, with outer enlarged row laterally; narrow band of villiform teeth across vomer; interorbital $4\frac{1}{4}$ to 6, convex. Gill rakers 5+9, lanceolate, robust, short.

Tubular scales 53 to 57 in upper section of lateral line, 17 or 18+2 or 3 in lower section; 6 or 7 scales above lateral line, 20 or 21 below, 26 or 27 predorsal; 8 to 10 rows of scales vertically on cheek.

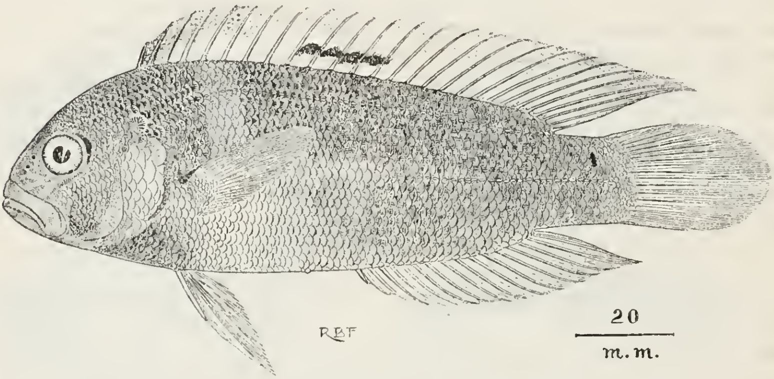

FIGURE 2.—DAMPIERIA MELANOSTIGMA, NEW SPECIES. TYPE

Scales with 10 to 15 basal radiating striae; 60 to 86 apical denticles with 2 series of basal elements; circuli very fine.

D. II, 25, i, second spine $4\frac{4}{5}$ to $5\frac{1}{3}$ in total head length, twenty-third ray $1\frac{1}{4}$ to $1\frac{1}{3}$; A. III, 14, i, third spine 4 to 5, twelfth ray $1\frac{1}{3}$ to $1\frac{2}{5}$; least depth of caudal peduncle $1\frac{9}{10}$ to $2\frac{1}{10}$; pectoral $1\frac{1}{5}$ to $1\frac{2}{5}$; ventral $1\frac{1}{4}$ to $1\frac{2}{5}$; caudal 3 to $3\frac{1}{4}$ in combined head and body, convex behind.

Burnt umber generally, variably lighter or darker. Often most of posterior portion of body pale to light yellowish or buff. Head with about a dozen oblique deep brown lines, variably distinct, mostly on cheek; others more or less as spots or bars above. Sometimes same appearance on predorsal and upper front part of trunk or as dusky spot to each scale. Trunk and tail variably with 10 blackish longitudinal lines, one medianly in alternating rows of scales. Edges of soft dorsal and anal narrowly dusky to black. Soft dorsal with variable subbasal black blotch, over 3 to 5 membranes, always present. Paired fins variously pale buff or gray and pectoral with dusky brown spot at origin of fin.

Diagnosis.—The present species is allied with *Dampieria melanotaenia* (Bleeker) but differs at once in the long black basal blotch in the soft dorsal. The blackish longitudinal lines, though usually distinct, are often obsolete or nearly absent.

Type.—Cat. No. 89989, U.S.N.M.

16283, 16285. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 112 to 150 mm.

11946, 11947, 16014, 17712. Alimango Bay, Burias Island. March 5, 1909. Length 150 to 160 mm.

16780. Busin Harbor, Burias Harbor. March 7, 1909. Length 133 mm.

22789. Busin Harbor. March 8, 1909. Length 149 mm.

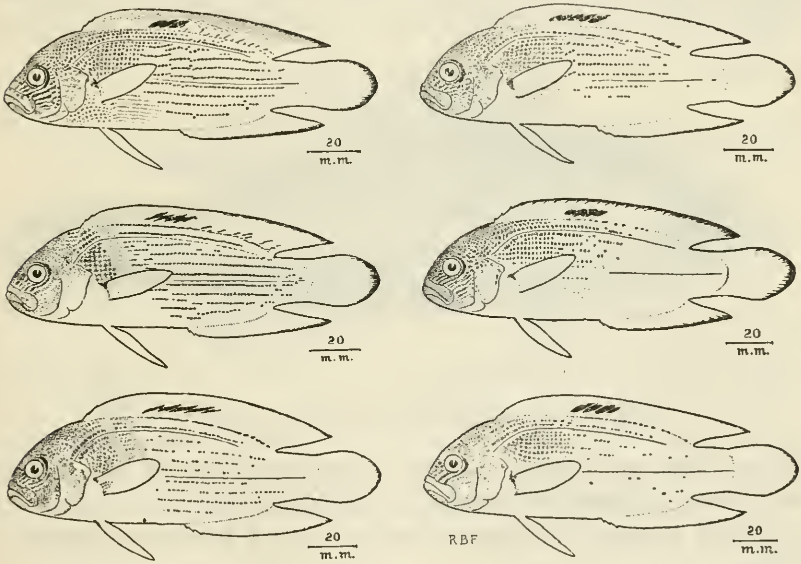

Figure 3.—Dampieria melanostigma, new species. Variation of color markings

17482 [1317]. Canmahala Bay, Luzon. March 11, 1909. Length 173 mm. Black stripes almost obsolete, only first shows continuously, rest as scattered specks. Dorsal blotch very large. Caudal with purplish margin, also soft dorsal and anal.

12664. Cebu market. April 4, 1908. Length 181 mm.

P. 16522. Langao Point, Luzon. June 24, 1909. (Type.)

15208. Mactan Island. March 25, 1909. Length 181 mm.

18642, 18643. Saboon Island, Ragay Gulf, Luzon. March 10, 1909. Length 150 to 158 mm.

8419. Hokuko, Soo Wan, Formosa. January 29, 1910. Length 163 mm.

BARTSCHINA, new subgenus

Type.—Dampieria bitaeniata, new species.

Diagnosis.—Distinguished from subgenus *Dampieria* by the larger scales, less than 60 in a lateral series, the small caudal less than the head in length and ending in a median point behind. Two broad dark longitudinal bands.

(For Dr. Paul Bartsch, who served as representative of the United States National Museum on the *Albatross* during part of the Philippine cruise.)

DAMPIERIA BITAENIATA, new species

Depth 3⅔ to 3¾; head 3¼, width 2¾ to 2⅘. Snout 4 to 4¾ in head from snout tip; eye 3⅘ to 4, greater than to subequal with snout, greater than interorbital; maxillary reaches ¼ to ⅖ in eye, expansion 2 to 2⅕, length 2⅖ to 2¾ in head from snout tip; teeth uniserial, small in jaws with 4 rather small upper front canines and 2 larger wide set lower anteriorly; vomer with narrow band of fine teeth, none on palatine or tongue; interorbital 6 to 6⅔, slightly convex. Gill rakers 4+12, lanceolate, ⅔ of gill filaments, which 1⅔ in eye.

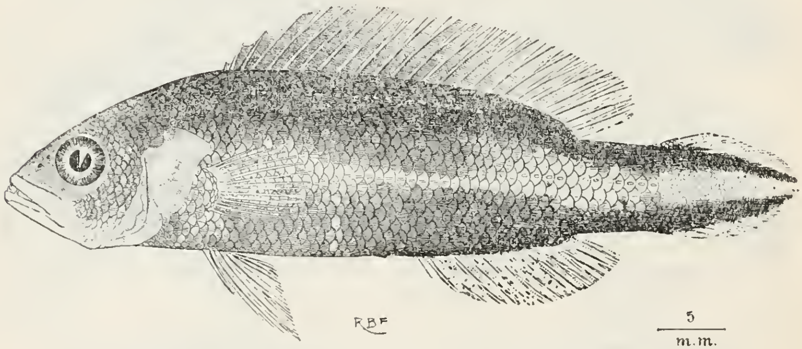

FIGURE 4.—DAMPIERIA BITAENIATA, NEW SPECIES. TYPE

Scales 42 to 44 in median lateral series to caudal base and 8 or 9 more on latter; upper section of lateral line with 32 or 33 tubular scales, lower section with 8 to 10 to caudal base and 1 or 2 more on latter; 3 or 4 scales above lateral line, 13 below, 21 predorsal forward opposite front pupil edge. 5 rows on cheek. Scales with 11 or 12 basal radiating striae; apical denticles 67 to 72; circuli very fine.

D. III, 26, I, third spine 4 in total head length, fourth ray 2⅛ to 2½; A. III, 14, I, third spine 3½to 4½, fourth ray 2 to 2⅛; caudal 1⅛ to 1⅕, ends in median point behind; least depth of caudal peduncle 2 to 2⅕; pectoral 1½ to 2⅔; ventral 1⅖ to 1½.

Brown. Dark brown streak, diffuse, extends from upper hind eye edges, broadens along back and upper caudal peduncle, then darker, sharply defined and narrowing toward median caudal rays, terminally. Another similar diffuse band from behind pectoral axil along lower side of tail and lower edge of caudal peduncle across caudal, where darker, sharply defined and narrowed out over lower median caudal rays terminally. Iris whitish. Dorsals and anals brown, with 6 or 7 indistinct paler longitudinal lines. Paired fins pale.

Diagnosis.—Known by its two dark longitudinal bands, darkened and approximated toward hind caudal edge.

Type.—Cat. No. 89990, U.S.N.M.

One example. Philippines. Length 58 mm.
22073 [604]. Santa Cruz, Marinduque. April 24, 1908. Length 67 mm.
16552. Galera Bay. June 9, 1908. (Type.)

OGILBYINA, new subgenus

Type.—*Dampieria longipinnis* Ogilby.

Diagnosis.—Distinguished from *Dampieria* by the larger scales, less than 60 in a lateral series, but the caudal elongated, much greater than the head or about 2/5 of body length to caudal base. Coloration uniform.

(For the late James Douglas Ogilby, the distinguished zoologist of the Queensland Museum).

DAMPIERIA LONGIPINNIS Ogilby

Dampieria longipinnis OGILBY, Annals Queensland Mus., No. 9, pt. 2, 1908, p. 34. Bowen, Queensland.

Depth 3¼; head 3⅗. Ventral profile much more arched than dorsal, which nearly straight behind nape. Snout ⅚ of eye, rounded; eye 3⅙ in head; maxillary reaches opposite front of eye; interorbital 5¼, convex. Scales 55 in lateral series; lateral line with 44 tubes in upper section and 7 in lower; 1 scale above lateral line, 16 below. D. II, 35, second spine longer, rather more than ¼ of eye and ½ longest ray; A. III, 19, begins below seventeenth dorsal ray; caudal pointed, 2½ in body length; least depth caudal peduncle ½ body depth; pectoral 3⅚ in body length; ventral 4⅕, second and third rays equal and longest, fin reaching vent. Uniform pale reddish brown, fins somewhat darker. (Ogilby.)

Only known from the type, 96 mm. long, obtained on the Queensland coast and in the Queensland Museum.

Genus PSEUDOCHROMIS Rüppell

Pseudochromis RÜPPELL, Neue Wirbelth., Fische, 1835, p. 8. Type *Pseudochromis olivaceus* RÜPPELL, designated by BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, vol. 15, No. 5, 1875, p. 2.

Labristoma SWAINSON, Nat. Hist. Animals, Fishes, vol. 2, 1839, p. 230. Type *Pseudochromis olivaceus* RÜPPELL, designated by SWAIN, Proc. Acad. Nat. Sci. Philadelphia, 1882, p. 275.

Assiculus RICHARDSON, Discov. in Australia, Stokes, vol. 1, 1846, p. 492. Type *Assiculus punctatus* RICHARDSON, monotypic.

Leptochromis Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 14. Type *Pseudochromis cyanotaenia* Bleeker, designated by Jordan, Genera of Fishes, pt. 3, 1919, p. 382.

Nesiotes De Vis, Proc. Linn. Soc. New South Wales, vol. 8, 1884, p. 453. Type *Nesiotes purpurascens* De Vis, monotypic.

Onar De Vis, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 875. Type *Onar nebulosum* De Vis, monotypic.

Body oblong or partly oblong, compressed. Head acute, above bony. Rictus oblique, not curved. Maxillary not extending beyond eye. Teeth in several rows in jaws, partly canine-like; vomer and palatines with teeth. Branchiostegals 6. Preopercle toothless. Scales large, 33 to 45 in lateral series, ctenoid. Opercles scaled. Dorsal and anal long, spines 2 or 3 in dorsal with rays 21 to 28, in anal spines 2 or 3 and rays 13 to 15. Caudal obtuse. Pectoral obtuse, rounded. Ventral inserted partly below pectoral base, spine slender and 5 rays branched with second or third longest.

ANALYSIS OF SPECIES

a^1. Caudal rounded or convex behind.[1]
b^1. Assiculus. Dorsal rays 20 to 23 (anal 10 to 14).
c^1. Caudal with dark markings.
d^1. Fine dark transverse lines on caudal; dorsal and anal with longitudinal fine dark lines---------- **purpurascens.**
d^2. Caudal with 1 or 2 horizontal black bands.
e^1. Black line along top of caudal peduncle into caudal, where forming submarginal wedge-shaped band---------- **flavipinnis.**
e^2. Black band across caudal longitudinally above and another similarly below---------- **melanotaenia.**
c^2. Caudal uniform.
f^1. Behind depressed pectoral 8 or 9 narrow vertical blue lines or bands; vertical fins dusky---------- **cyanotaenia.**
f^2. Uniform brown, variably pale or dark, often few horizontal dark lines on dorsal; vertical fins pale---------- **tapeinosoma.**
f^3. Body and head with small scattered azure blue spots; opercle with 3 to 5 flat spines along upper hind edge---------- **punctatus.**
b^2. Devisina, new subgenus. Dorsal rays 25 to 27 (anal 14 to 17).
g^1. Anal rays 14.
h^1. Upper opercle edge with 5 flat spines---------- **quinquedentatus.**
h^2. Upper opercle edge entire.
i^1. Vertical fins uniformly pale.
j^1. Bright orange, most scales below lateral line with blue dot; 2 blue lines cross eyeball---------- **aureus.**
j^2. Black line from snout tip through eye and over postocular. (Upper and lower caudal ray produced in filament.) **perspicillatus.**
i^2. Soft dorsal and anal with narrow longitudinal blue lines.
k^1. Paired fins dusky---------- **fuscus.**
k^2. Paired fins yellow---------- **xanthochir.**
g^2. Anal rays 17; body uniform brown.
l^1. Jaws equal---------- **rodwayi.**
l^2. Lower jaw produced---------- **natalensis.**

---

[1] *Pseudochromis persicus* Murray and *Pseudochromis rodwayi* Johnston without shape of the caudal described, may fall in this section.

b^3. KLUNZINGERINA, new subgenus. Dorsal rays 19 to 37 (anal 18 to 20).

- m^1. Body without blue spots.
  - n^1. No black vertical bar at upper angle of preopercle; several blue lines on muzzle; caudal sage green, oblique scarlet and blue marginal band on each lobe----------novae-hollandiae.
  - n^2. Short black vertical bar at upper angle of preopercle; no blue lines on muzzle or caudal. spencei.
- m^2. Body with blue spots.
  - o^1. Two blue lines on preopercle; black spot behind opercle with vertical blue-white line through anterior third; young with dark-brown line through eye to end of dorsal, fading with age ------------------------------persicus.
  - o^2. Dark-brown band, wide as pupil, from each side of predorsal down through eye and over cheek behind maxillary----------------splendens.

a^2. PSEUDOCHROMIS. Caudal truncate or trifurcate to emarginate.

- p^1. Anal rays 13 to 15.
  - q^1. Upper hind opercle edge entire.
    - r^1. Black lateral stripe from snout tip through eye to middle caudal rays; fins yellowish----------nigrovittatus.
    - r^2. No black median lateral band.
      - s^1. Broad yellow band from snout along back to caudal end behind; dorsal yellowish, rest of body blackish. **flavivertex.**
      - s^2. No yellow band along back, body olive green, many lateral scales blue-edged; opercular lobe black; upper and lower caudal edges yellowish. olivaceus.
  - q^2. Upper hind opercle edge with 4 or 5 flat spines.
    - t^1. Each body scale with blue spot; diminishing last dorsal and anal rays whitish----------polynemus.
    - t^2 Each scale on predorsal and back with darker spot; dark blotch on opercle------------------moorei.
- p^2. Anal rays 26; black spot on opercle close to upper end of preopercle border; fins gray white, 2 black streaks on caudal near upper and lower borders--------------caudalis.

Subgenus ASSICULUS Richardson

Dorsal rays 20 to 23, anal 10 to 14. Caudal rounded or convex behind.

PSEUDOCHROMIS PURPURASCENS (De Vis)

Nesiotes purpurascens De Vis, Proc. Linn. Soc. New South Wales, vol. 8, 1884, p. 453. South Sea.—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 189 (copied).

Pseudochromis (*Pseudochromis*) *purpurascens* McCulloch, Biol. Res. Endeavour, vol. 5, pt. 4, June 8, 1926, p. 188, pl. 49 (Ringdove Bay, Api Island, New Hebrides).

Depth 3⅓; head 3. Snout 4⅘ in head; eye 3⅔, greater than snout or interorbital; maxillary reaches ½ in eye, expansion 3 in eye, length 3 in head; band of minute teeth in front of each jaw with enlarged outer row and 2 pairs of large canines in front above, also canines each side of mandible anteriorly and 1 or 2 farther back each side; angular band of minute teeth on vomer and rounded patch on front part of each palatine; interorbital low.

Scales 38 in median lateral series to caudal base and 9 more on latter; tubular scales 28 in upper section of lateral line, 6 in lower section to caudal base; 4 scales above lateral line, 12 below, 12 predorsal forward opposite eye center, 4 rows on cheek with preopercle flange naked.

D. III, XIV, 9, I, third spine 4⅛ in head, first branched ray 1⅘; A. III, 14, I, third spine 4¼, third ray 1⅛; caudal 1⅕, rounded behind; least depth of caudal peduncle 2⅒; pectoral 1⅖; ventral 1⅖.

Dark brown on head and back, becoming lighter on sides and below. Dark line crosses middle of each scale of front half of body and uniting with its fellows, forms striking lines which extend obliquely downward and backward through each row of scales; these largely disappear behind middle of body, but traceable about region of lateral line. Head with dark spots and lines extending along suborbital and across opercle. An indefinite yellow band present along middle of each side. Dorsal brown, with many darker spots and curved lines between rays which tend to form irregular horizontal bands. Anal like dorsal, but dots less distinct. Caudal with irregular transverse rows of darker dots. Paired fins hyaline. Length 64 mm. (McCulloch.)

Melanesia.

PSEUDOCHROMIS FLAVIPINNIS (Seale)

Labracinus flavipinnis Seale, Philippine Journ. Sci., vol. 4, No. 6, 1909, p. 530. Zamboanga, Mindoro.

Depth 3¾; head 3½. Snout 4¾ in head; eye 3⅒; maxillary 3¾, extends below front pupil edge; mouth small, oblique, lower jaw protruded; upper teeth fine, in several bands, with 6 enlarged front canines; lower teeth uniserial on sides, with 2 enlarged canines and bands of small teeth in front; teeth on vomer and palatines; interorbital 4¾; peropercle and opercle edges entire. Gill rakers 12 on lower limb, sharp pointed, short.

Scales 36, lateral line interrupted, 11 in vertical series, 10 predorsal, 3 rows on cheek. Body and head, except chin and snout, covered with rather small, smooth scales, caudal scaled half its length, other fins unscaled.

D. II, 20, spines short, second spine half first ray, longest ray 2⅒ in head; A. III, 10, rays 2; caudal 1⅓, rounded; least depth of caudal peduncle 1¾; pectoral 1¼; ventral 1⅕.

In life yellowish brown, darkest anteriorly, posterior half of body with some small vertical blue marks. Top of snout, interorbital space and nuchal region back along base of spinous dorsal black. Lower half of spinous dorsal jet black, upper half orange, narrow yellow line between colors. Caudal yellow, jet black line from along top of caudal peduncle into fin where forming submarginal wedge-shaped band. Pectoral yellowish brown. Anal and ventrals pink. In alcohol less bright, the bluish markings obsolete. (Seale.)

Only known from the type, 46 mm. long, obtained at Zamboanga, June 11, 1908.

PSEUDOCHROMIS MELANOTAENIA Bleeker

Pseudochromis melanotaenia BLEEKER, Nederland. Tijdschr. Dierk., vol. 1, 1863, p. 273. Atapupu, Timor.—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 119 (Ambon).

Pseudochromis (*Leptochromis*) *melanotaenia* BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 20 (Timor and Amboina); Atlas Ichth. Ind. Néerland., vol. 9, 1877, pl. (1)390, fig. 7.

Depth 3⅕; head 2½. Snout 5⅔ in head from snout tip; eye 3½, greater than snout; maxillary reaches opposite front pupil edge, expansion ½ of eye, length 3 in head from snout tip; teeth in several series in jaws, outer row little enlarged, anteriorly 3 upper and 2 lower canines; several series of small teeth in V-shaped band on vomer, and each palatine with narrow band; interorbital level.

Scales 26 in median lateral series to caudal base and 2 more on latter (description says 40 between upper angle of gill opening and caudal base); upper section of lateral line with 22 tubular scales, lower section with 7 to caudal base and 2 more on latter; 3 scales above lateral line, 10 below, 10 predorsal at least forward midway in interorbital, 5 rows on cheek of which 1 row on preopercle flange.

D. III, 21 to 23, second spine 4 in total head length, nineteenth ray 2⅖; A. II, 13 or 14 (figure shows II, 12), second spine 4, seventh ray 2½; caudal 1½, convex behind; least depth of caudal peduncle 2⅕; pectoral 1⅞; ventral 1½.

Body brown. Iris golden. Dorsals yellow, broadly blackish basal band. On caudal above slightly inclined blackish band from front short rays to hind edges of supero-median ones; similar one from lower front short rays to hind edges of infero-median ones. Fins otherwise golden. Length 44 mm. (Bleeker.)

East Indies.

PSEUDOCHROMIS CYANOTAENIA Bleeker

Pseudochromis cyanotaenia BLEEKER, Nat. Tijds. Nederland. Indië, vol. 13. 1857, p. 72. Kajeli.—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 263 (Saleyer; Tuir; Elat, High Key).

Pseudochromis (*Leptochromis*) *cyanotaenia* BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 21, pl. 1, fig. 2 (Buru, Amboina, Ceram); Atlas Ichth. Ind. Néerland., vol. 9, 1876–1877, pl. (1)390, fig. 6.

Depth 3½; head 3. Snout 4 in head from snout tip; eye 3, greater than snout; maxillary reaches ⅓ in eye, expansion ½ of eye, length 2¾ in head measured from snout tip; teeth in jaws in many rows, 3 canines above and 2 below anteriorly; narrow horseshoe-like band of fine teeth on vomer and palatines; interorbital not elevated.

Scales 33 in median lateral series; about 25 scales in upper section of lateral line, about 13 in lower section to caudal base and 2 more on latter; 3 scales above lateral line, 8 below, 5 rows on cheek of which 1 on preopercle flange. Fins scaleless except caudal base.

D. II, 21 or 22, second spine 4 in total head length, seventeenth ray 2; A. II, 13 or 14, second spine 3, tenth ray 1⅞; caudal 1⅛, rounded behind; least depth of caudal peduncle 1⅞; pectoral 1¼; ventral 1⅛. Head and body above and posteriorly deep brown, sides of head and trunk below yellowish brown. Iris greenish brown. On body behind depressed pectoral 8 or 9 transverse narrow blue lines. Vertical fins gray brown or blackish. Paired fins yellowish or yellowish brown. (Bleeker.)

East Indies.

PSEUDOCHROMIS TAPEINOSOMA Bleeker

Pseudochromis tapeinosoma BLEEKER, Nat. Tijds. Ned. Indië, vol. 4, 1853, p. 115. Amboina.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 258 (compiled).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 263 (Sumba, Lamakera, Kabala, Karabelang, Lucipara, Tuir, Elat).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 276 (Philippines).

Pseudochromis tapeinosomus JORDAN and SEALE, Proc. U. S. Nat. Mus., vol 28, 1905, p. 781 (Negros).

Pseudochromis (*Leptochromis*) *tapeinosoma* BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 23, pl. 1, fig. 1 (Sumatra, Buru, Ceram, Amboina); Atlas Ichth. Ind. Néerland., vol. 9, 1877, pl. (1)390, fig. 1.—MCCULLOCH, Biol. Res. Endeavour, vol. 5, pt. 4, June 8, 1926, p. 192, pl. 51 (Masthead Island, reef North West Islet, Cairns Reef, reef Murray Island; New Hebrides).—WHITLEY, Rec. Australian Mus., vol. 16, No. 1, Oct. 7, 1927, p. 14 (Michaelmas Cay, North Queensland).

Depth 3¼ to 4; head 2¾ to 3, width 1⅔ to 2⅕. Snout 4⅛ to 4¼ in head from snout tip; eye 3⅕ to 3¼, greater than snout or interorbital; maxilllary reaches ¼ in eye, length 3 in head from snout tip; teeth fine, in single row in jaws, with anterior little enlarged; interorbital 5¼ to 5½, narrow, nearly level. Gill rakers 3+9, short weak points; less than gill filaments, which ½ of eye.

Scales 23 or 24 in median lateral series to caudal base and 4 or 5 more on latter; upper section of lateral line with 20 or 21 tubular scales, lower section with 5 or 6 to caudal base; 1 scale above lateral line, 10 below, 10 predorsal extending forward nearly opposite front eye edge, 3 rows on cheek to preopercle edge. Muzzle naked. Scales with 8 or 9 basal radiating striae; apical denticles 40 or 42, slender; circuli fine.

D. II, 21, I, first ray 2 in total head length; A. II, 12, I, first ray 2⅓; caudal 1⅕, rounded behind; least depth of caudal peduncle 1⅘ to 2; pectoral 1⅖ to 1⅗; ventral 1⅓ to 1⅖.

Brown, nearly uniform, only slightly paler on head below and abdomen. Iris slaty. Dorsals and anals dusky terminally, otherwise fins all pale brownish.

East Indies, Philippines, Queensland, Melanesia.

Twelve examples. Batan Island, Luzon. June 5, 1909. Length 13 to 20 mm.
Two examples. Batan Island. July 22, 1909. Length 23 to 27 mm.
51977 U.S.N.M. Negros. Dr. B. Dean. Length 43 mm.
48728, 48729, 48763 to 48767 A.N.S.P. Philippines. Commercial Mus. Phila. Length 35 to 64 mm.

PSEUDOCHROMIS PUNCTATUS (Richardson)

Assiculus punctatus RICHARDSON, Discov. in Australia, Stokes, vol. 1, 1846, p. 492, pl. 2, fig. 1. Coast of Australia.

Pseudochromis punctatus MCCULLOCH, Mem. Queensland Mus., vol. 3, June 28, 1915, p. 47 (Useless Inlet, Shark Bay, West Australia).

Pseudochromis mülleri KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 370. Port Darwin.—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 9, 1884, p. 28 (copied).—WAITE, Rec. Australian Mus., vol. 6, pt. 2, 1905, p. 62 (North Western coast).

Cichlops filamentosus MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 570. Port Darwin.

Depth 2⅘; head 2¾, width 2. Snout 4 in head from upper jaw tip; eye 3, greater than snout or interorbital; maxillary reaches ⅖ in eye, expansion 2 in eye, length 2 in head from snout tip; band of fine teeth in upper jaw, uniserial laterally and with 4 canines in front; narrow band of fine teeth in lower jaw, with 6 front canines and 1 on each side; vomer with minute teeth in band of 3 or 4 irregular rows, band on palatines more minute and with 4 or 5 irregular rows; interorbital 6, low.

Scales 35 in median lateral series to caudal base and 2 more on latter; upper section of lateral line with 36 tubular scales, lower section with 9 to caudal base and 2 more on latter; 3 scales above lateral line, 12 below, about 9 ? predorsal forward opposite middle of eyes, 4 rows on cheek and preopercle flange naked.

D. III, 23 (figure shows III, 24, I), third spine $2\frac{4}{5}$ in total head length, twenty-first ray 1; A, III, 12, third spine $1\frac{4}{5}$, ninth ray 1; caudal $\frac{1}{8}$, convex behind; least depth of caudal peduncle 2; pectoral $1\frac{1}{8}$; ventral $2\frac{1}{4}$ in combined head and body to caudal base.

Shining yellowish brown, with several round dots of azure blue scattered over the body. Cheek crossed obliquely by row of 3 spots. Length 64 mm. (Richardson.)

McCulloch mentions specimens to 89 mm. and that a large black blotch occurs on the spinous dorsal, rest of fin with anal and caudal uniform or closely covered with minute ocelli.

DEVISINA, new subgenus

Type.—Pseudochromis quinquedentatus McCulloch.

Diagnosis.—Includes species with rounded caudal, dorsal rays 25 to 27, and anal rays 14 to 17.

(For Charles W. De Vis, of the Queensland Museum, who described many Australian fishes 1882–1885.)

PSEUDOCHROMIS QUINQUEDENTATUS McCulloch

Pseudochromis quinquedentatus McCulloch, Biol. Res. Endeavour, vol. 5, pt. 4, June 8, 1926, p. 190, pl. 50. Off Cape Capricorn, Queensland, in 12 fathoms; Northwest of Pine Peak, Queensland, in 25 fathoms.

Depth $3\frac{2}{5}$; head $3\frac{1}{8}$. Snout $4\frac{1}{5}$ in head; eye $3\frac{2}{3}$, greater than snout or interorbital; maxillary reaches midway in eye, expansion $2\frac{1}{4}$ in eye, length $2\frac{4}{5}$ in head; band of minute upper teeth narrowing laterally in jaws, outer row little enlarged, several pairs of upper front canines in each jaw beside lower canine each side medially; angular patch of minute teeth on vomer and some on front portion of each palatine; upper opercular edge with 4 or 5 flat teeth; gill rakers 10 on lower branch of first arch.

Scales 47 in median lateral series to caudal base and 9 more on latter; upper section of lateral line with 36 tubular scales, lower section with 8 to caudal base; 2 scales above lateral line, 13 below; about 16 ? predorsal forward opposite middle of interorbital, 5 rows on cheek with preopercle flange naked. Scales ctenoid, except cycloid on nuchal region and breast.

D. III, 26, third spine 5 in head, twenty-first ray $1\frac{9}{10}$; A. III, 14, I, third spine $4\frac{1}{8}$, third ray $2\frac{1}{3}$; caudal $1\frac{1}{4}$, convex behind; least depth of caudal peduncle 2; pectoral $1\frac{1}{2}$; ventral $1\frac{1}{2}$.

Light yellowish brown, each scale on upper front part of sides with brownish spot, forming rows. Faint or pale stripe along middle of each side. Dorsal and anal dusky between rays, especially basally. Other fins hyaline. Length 60 mm. (McCulloch.)

PSEUDOCHROMIS AUREUS Seale

Pseudochromis aurea SEALE, Philippine Journ. Sci., vol. 4, No. 6, 1909, p. 528. Sitanki Island, Jolo Archipelago.

Depth 3; head 3⅖. Snout 3¾ in head; eye 4; maxillary reaches opposite pupil, length 2½ in head; mouth moderate, lower jaw projecting; teeth in front of jaws in several series with 4 large curved canines; teeth on sides of jaws in single series; teeth on vomer and palatines; interorbital 5; lower preopercle limb with 3 membranous points. Gill rakers 13 on lower limb, rather flat and wide.

Scales 41, transversely 14; smooth on entire body, their borders finely denticulated; 4 rows on cheek.

D. III, 26, spines rather weak, ⅓ of head, longest ray 1⅓; A. III, 14, base equals head, third spine 2⅓, longest ray 1½; caudal 1, rounded; least depth of caudal peduncle 1⅘; pectoral 1⅛; ventral reaches anal.

Bright orange, most scales below lateral line except on thorax with bright blue dot. Two blue lines cross eyeball but not out on orbit. Head uniform orange, very slightly darker above. Fins uniform orange. (Seale.)

Known from the type 90 mm. long and numerous paratypes.

PSEUDOCHROMIS PERSPICILLATUS Günther

Pseudochromis perspicillatus GÜNTHER, Proc. Zool. Soc. London, 1862, p. 193 (not pl. 27, fig. C). China.—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 263 (Tual, Niedrig Key; Elat, High Key).

Amblyopus sagitta (not GÜNTHER) GÜNTHER, Proc. Zool. Soc. London, 1862, pl. 27, fig. A.

Pseudochromis ransonnetii STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, vol. 60, pt. 1, 1870, p. 562. Singapore.

Pseudochromis (*Pseudochromis*) *ransonneti* BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 19 (copied).

Pseudochromis rex SEALE, Philippine Journ. Sci., vol. 4, No. 6, 1909, p. 529. Sitanki Island, Jolo Archipelago.

Depth 3; head 3¼. Snout 4 in head from snout tip; eye 4, long as snout, greater than interorbital; maxillary reaches ⅖ in eye, expansion 1½ in eye, length 2⅔ in head from snout tip; lower jaw with 2 and upper with 3 pairs of canine teeth; interorbital low.

Scales 42 in median lateral series to caudal base and 2 more on latter; about 32 tubes in upper section of lateral line, and 7 in lower section to caudal base and 1 more on latter; 6 scales above lateral line, 17 below, about 25 ? predorsal forward opposite front eye edge, 6 rows on cheek of which I row on preopercle flange. Fins all more or less scaleless.

D. III, 25, third spine 3 in total head length, twenty-third ray 2; A. III, 14, i, third spine 4¼, longest, thirteenth 2; caudal 1⅛, rounded slightly behind, with upper and lower ray produced into a filament; least depth of caudal peduncle 2; pectoral 1¼; ventral 1¾.

Reddish olive, with chestnut brown band extending from end of upper jaw through middle of base of dorsal fin; band very dark and slender anteriorly, gradually becoming lighter and broader posteriorly. (Günther.)

Günther described several in the British Museum, the largest 90 mm. Steindachner does not give the dimensions for *Pseudochromis ransonneti* and though its second anal spine is said to be longer than the third, there is nothing to clearly establish it as a distinct species from Günther's fish. There is nothing in the description of *Pseudochromis rex* to maintain it as a distinct species. In life it is said to be dark bluish on upper front portion of head and body with jet black line equal to width of pupil from snout tip through eye to below front third of soft dorsal, some dusky dots below posterior half of this line. General body color yellow, belly and chin pale blue. Dorsal base dusky with bluish wash, outer ⅔ of fin yellowish white posteriorly. Caudal and anal uniform yellowish. Pectorals same. Ventrals bluish white. Length 120 mm.

PSEUDOCHROMIS FUSCUS Müller and Troschel

Pseudochromis fuscus Müller and Troschel, Horae Ichth., pt. 3, 1849, p. 23, pl. 4, fig. 2. Celebes.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 257 (copied).—Bleeker, Verh. Kon. Akad. Wet. Amsterdam, vol. 15, 1875, pl. 1, fig. 5.—Günther, Journ. Mus. Godeffroy, vol. 5, pt. 11, 1876, p. 159 (Solomons, Pelew Islands, Yap).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, pl. (5) 388, fig. 4.—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 44 (Boston Island).—Day, Fauna Brit. India, vol. 2, 1889, p. 227, fig. 82.—Steindachner, Abh. Senckenberg. Naturf. Ges., vol. 25, 1900, p. 427 (Ternate).—(Regan) Bedot, Rev. Suisse Zool., vol. 17, 1909, p. 169 (Amboina).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 262 (Sumba; Kabala dua, Borneo Bank; Kaniungan ketjil Island; Lirung, Salibabu; Salomakie Island; Saleyer; Tual Kei; Elat, High Key; Roma Island).—Beaufort, Bijd Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 119 (Amboina).—Regan, Proc. Zool. Soc. London, 1914, pt. 3, p. 650 (Monte Bello Islands, North-west Australia).—Vinciguerra, Ann. Mus. Civico Stor. Nat. Genova, series 3, vol. 10, 1926, p. 583 (Sarawak).—Whitley, Rec. Australian Mus., vol. 16, No. 1, Oct. 7, 1927, p. 13 (Michaelmas Cay, North Queensland).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 189 (Shortland Island).

Pseudochromis (*Pseudochromis*) *fuscus* Bleeker, Verh. Kon. Akad. Wet Amsterdam, No. 5, vol. 15, 1875, p. 16 (Batu, Bawean, Celebes, Sangi, Flores, Solor, Timor, Ternate, Buru, Ceram, Amboina, Banda, Goram, Waigiu).—McCulloch, Biol. Res. Endeavour, vol. 5, pt. 4, June 8, 1926, p. 186 (types of *P. wardii* and *Onar nebulosum;* New Britain and Solomon Islands).

Pseudochromis adustus Müller and Troschel, Horae Ichth., pt. 3, 1849, p. 23, pl. 4, fig. 3. Philippines.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 258 (copied); Cruise of Curaçoa, Brenchley, 1873, p. 407 (Solomon Islands).

Pseudochromis (*Pseudochromis*) *adustus* Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 18 (copied).

Onar neubulosum De Vis, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 875. Murray Island.

Pseudochromis nebulosus McCulloch, Mem. Queensland Mus., vol. 3, Jan. 28, 1915, p. 49, pl. 16, fig. 2 (paratype; Duke of York Island, New Britain).

Pseudochromis wildii Ogilby, Annals Queensland Mus., No. 9, pt. 1, 1908, p. 34. Moreton Bay, Queensland.

Depth 2⅞ to 3⅛; head 2¾ to 3⅛, width 2⅛ to 2⅖. Snout 4⅕ to 4⅓ in head from snout tip; eye 3⅕ to 4, greater than snout in young to subequal with age, greater than interorbital; maxillary reaches ⅕ to ¼ in eye, expansion 1⅘ to 2⅔ in eye, length 2¾ to 2⅘ in head from snout tip; teeth small, conic, in narrow bands in jaws, with 4 large canines in front of each jaw, above median pair much smaller and close together, below median well separated; interorbital 4⅘ to 5, little convex. Gill rakers 5+12, lanceolate, little less than gill filaments or 2¾ in eye.

Scales 37 or 38 in median lateral series to caudal base and 7 or 8 more on latter; tubular scales 24 to 34 in upper section of lateral line and 8 to 10 more in lower section to caudal base also followed by 1 or 2 more on latter; 3 scales above lateral line, 12 to 14 below, 18 to 26 predorsal forward till above nostril, 4 rows on cheek to preopercle ridge and preopercle flange naked. Scales with 15 basal radiating striae; apical denticles 80; circuli very fine.

D. III, 27, I or 26, I, third spine 2⅖ to 3⅔ in total head length, twenty-third ray 1⅘ to 2; A. III, 14, I, vary 16, I, third spine 2⅞ to 3. fourth ray 1⅘ to 2⅕; caudal 1⅕ to 1¼, rounded, convex behind; least depth of caudal peduncle 2 to 2¼; pectoral 1⅓ to 1⅖; ventral 1⅒ to 1⅛.

Brown, each scale usually with slightly paler median shade. Lower surface of head and abdomen often slightly paler than above. Iris dull neutral gray. Caudal light yellowish to dusky. Dorsals, anals and ventrals all more or less dusky, variably little paler. Dorsals and anals with 6 or 7 longitudinal pale lines extending usually whole length of fin, often variously broken as spots or bars. Pectoral pale, uniform, usually with black basal blotch transversely covering whole base and with whitish or gray adjoining shade on outer border; blotch very variable, from almost black to nearly absent.

India, Andamans, East Indies, Philippines, Queensland, Melanesia, Micronesia. The best known species of the family, very well marked, but variable. Chiefly distinguished by the blackish blotch at the pectoral base and the blackish ventrals at all ages. The caudal as well as the general body coloration is subject to considerable variation in shades of brown, often the former may even be yellowish or variously white bordered with a darker center.

22113. Alimango Bay, Burias Island. March 5, 1909. Length 75 mm.

One example. Biri Channel, Luzon. June 2, 1909. Length 54 mm.

15033. Busin Harbor, Burias Island. March 7, 1909. Length 68 mm.

7854. Candaraman Island, North Balabac Strait. January 4, 1909. Length 57 mm.

One example. Casagoran, Malhon Island. July 27, 1909. Length 68 mm. Caudal yellowish.

Four examples. [556.] Cataingan Bay, Masbate. April 18, 1907. Length 67 to 76 mm. Largest without dark blotch to pectoral base. Most have yellowish caudals.

9784. Caxisigan Island, North Balabac Strait. January 2, 1909. Length 54 mm.

10835. Dalaganem Island, Palawan. April 8, 1909. Length 75 mm.

15663. Mactan Island. March 25, 1909. Length 61 mm.

21100 [1646]. Maculabo Island. June 14, 1909. Length 70 mm.

Four examples. [556]. Cataingan Bay, Masbate. April 18, 1907. Length 67 1908. Length 38 to 62 mm.

22200, 22201. Pangasinan Island, Jolo. February 13. 1908. Length 69 to 75 mm.

8975. Porongpong Island, Palumbanes Group. June 10, 1909. Length 72 mm.

19138. Port Langcan, Dumaran Island. April 7, 1909. Length 74 mm.

20768. Pujada Bay, Mindanao. May 15, 1908. Length 66 to 68 mm. 2 examples.

14770. Romblon. March 26, 1908. [475, 477]. Length 65 to 79 mm. 3 examples.

8070. Sacol Island, east of Zamboanga. September 15, 1909. Length 68 mm.

22762. Sitanki Reef. September 21, 1909. Length 80 mm.

22763. Sitanki Reef. September 24, 1909. Length 69 mm.

22885. Togian Bay. March 19, 1909. Length 58 mm.

21734. Tulayan Island, Jolo. September 15, 1909. Length 70 mm.

One example. Tumindao, southern lagoon. February 26, 1908. Length 47 mm.

Two examples. Danawan and Si Amil Islands, Borneo. September 27, 1909. Length 71 to 72 mm.

Fifteen examples. Great Tobea Island. December 15, 1909. Length 33 to 64 mm. Several with upper, lower and hind borders of caudal whitish, in others only upper and lower borders broadly whitish.

14865. Dodepo and Pasejogo Islands, Gulf of Tomini, Celebes. November 16, 1909. Length 66 mm.

24137. Tomahu Island, Bouro. December 12, 1909. Length 65 mm.

One example [440]. No locality. Length 61 mm.

PSEUDOCHROMIS XANTHOCHIR Bleeker

Pseudochromis xanthochir Bleeker, Nat. Tijds. Nederland. Indië, vol. 8, 1855, p. 443. Manado, Celebes.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 257 (copied).—Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, pl. 3, fig. 4.—Day, Fishes of India, pt. 2, 1876, p. 267, pl. 58, fig. 6 (Andamans).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, pl. (5)388, fig. 1.—Day, Fishes of India. Suppl., 1888, p. 791 (note).

Pseudochromis (*Pseudochromis*) *xanthochir* Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 5, vol. 15, 1875, p. 17 (Bawean, Celebes, Buru).

Malacocanthus coccinicauda (Tickell) Day, Fishes of India, Suppl., 1888, p. 791. Saddle Island. off Kyouk, Phool.

Malacocanthus bicolor (Tickell) Day, Fishes of India, Suppl., 1888, p. 791. Saddle Island.

Depth 3⅛ to 3⅗; head 3 to 3⅛, width 2⅛ to 2⅕. Snout 3⅔ to 4⅘ in head from snout tip; eye 3⅛ to 4, greater than snout or interorbital, subequal with snout with age; maxillary reaches ⅕ to ⅓ in eye, expansion 1¾ to 2¾ in eye, length 2¾ to 3 in head from snout tip; teeth uniserial, small, conic, with 4 canines in front of each jaw of which upper pair closer and each outer pair larger; fine band of small short teeth on vomer and palatines; interorbital 4⅔ to 5⅕, little convex. Gill rakers 5+13, lanceolate, ¾ of gill filaments, which 1¾ in eye.

Scales 30 to 36 in median lateral series to caudal base and 7 to 10 more on latter; upper section of lateral line with 23 to 28 tubular scales, lower section with 7 or 8 to caudal base and 0 to 2 more on latter; 2 to 4 scales above lateral line, 9 to 12 below, 11 to 20 predorsal forward opposite front eye edge, 3 or 4 rows on cheek to preopercle ridge and flange naked. Scales with 12 to 15 basal radiating striae; apical denticles 45 to 68; circuli very fine.

D. III, 26, i, of which half or more of anterior rays simple, third spine 3⅕ to 5 in total head length, fourth ray 1⅘ to 2¼; A. II or III, 14, i, second or third spine 2⅘ to 3¼, fourth ray 2 to 2⅛; caudal 1⅕ to 1¼, rounded convexly behind; least depth of caudal peduncle 1¾ to 1⅞; pectoral 1⅓ to 1⅖; ventral 1¼ to 1⅓.

Brown, paler on lower surfaces of head and body. Slightly darker horizontal bands, ill defined, follow in courses of scales on body. Iris neutral brown to slate. Along hind eye edge narrow dusky border. Dorsals and anals brown to dusky marginally, with 5 to 7 pale longitudinal lines, usually most contrasted on soft fins. Caudal usually yellowish, becomes dusky terminally, often upper and lower borders broadly whitish, sometimes fin uniformly dark. Paired fins always pale or yellowish.

Andamans, East Indies, Philippines. Though closely related to *Pseudochromis fuscus* my examples always distinguished by the yellowish or pale ventrals. While quite variable the extremes are far less than in *Pseudochromis fuscus*, the species always uniformly more pale. In alcohol many specimens are quite light or yellowish white to uniformity. They intergrade in color into the darker examples.

Two examples. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 28 to 51 mm.
16644. Baganga Bay, Mindanao. May 13, 1908. Length 62 mm.
22728. Biri Channel, Luzon. June 1, 1909. Length 61 to 66 mm. 2 examples.
One example. Biri Channel. June 2, 1909. Length 66 mm.
6110. Bolinao Bay, Luzon. May 10, 1909. Length 38 mm.
22778. Busin Harbor, Burias Island. April 23, 1908. Length 61 mm.
15304. Busin Harbor. March 8, 1909. Length 61 mm.
16831. Butauanan Island. June 12, 1909. Length 67 mm.

One example. Caldingan Bay, Masbate. Length 68 mm. [552.]

6280. Candaraman Island, North Balabac Strait. January 4, 1909. Length 76 mm.

22155. Canmahala Bay. March 11, 1909. Length 76 mm.

One example. Caracaran, Batan Island. June 8, 1909. Length 49 mm.

Three examples. Cataingan Bay, Masbate. April 17, 1908. Length 40 to 78 mm.

Four examples. Cataingan Bay. April 18, 1908. Length 60 to 75 mm. [551.]

22841. Isabela, Basilan Island. September 11, 1909. Length 37 to 70 mm. 6 examples.

One example. Morongas Island. February 10, 1908. Length 31 mm. In coral head.

21977. Murcielagos Bay, Mindanao. August 9, 1909. Length 68 mm.

22423. Port Dupon, Leyte. March 17, 1909. Length 75 mm.

20532. Port Galera, Mindoro. October 27, 1909. Length 63 mm.

One example. Port Matalvi, Luzon. November 23, 1908. Length 44 mm.

One example. Port Palapag. June 3, 1909. Length 50 mm.

2221 [D. 5519]. Point Tagolo Light, S. 71° W., 8.7 miles (8° 48′ N., 123° 31′ 15″ E.). August 9, 1909. Length 66 mm.

20976. Rapurapu Island. April 24, 1908. Length 45 mm.

12710 [312]. Reef south lagoon, Tumindao Island. February 28, 1908. Length 65 mm.

One example. Sablayan, Mindoro. December 12, 1908. Length 50 mm.

14047, 14048. Sacol Island. September 9, 1909. Length 64 to 69 mm.

22185. Simaluc Sibi Island, north of Tawi Tawi. September 23, 1909. Length 54 mm.

22764 [1995]. Sitanki Reef. September 24, 1909. Length 60 mm.

Two examples. Surigao, Mindanao. May 8, 1908. Length 47 to 67 mm.

22351 [1051]. Taganak Island. January 7, 1909. Length 75 mm.

21909. Tapiantana Island. September 13, 1909. Length 75 mm.

8224. Tataan. August 20, 1909. Length 53 mm.

13160. Tumindao Island. February 26, 1908. Length 63 mm.

21411, 8687. Tutu Bay, Jolo. September 19, 1909. Length 78 to 80 mm.

One example. Sipadan Island, Borneo. September 28, 1909. Length 48 mm.

Thirteen examples. Great Tobea Island. December 15, 1909. Length 33 to 56 mm.

One example. Danawan and Si Amil Islands, Borneo. September 27, 1909. Length 59 mm.

22731. Talisse Island. November 9, 1909. Length 58 mm. Pearly gray, more distinctly peach pink across hinder portion of head, somewhat washed with olive on top of head; lower head and breast whitish; on side of body in area above angle of gill opening and front of anal covered with roundish scarlet spots about half size of pupil; extend on dorsal and caudal as well as anal; on anal become orange; margin of dorsal slightly dusky; tip of caudal similar; paired fins pale and immaculate; edge of orbit orange, iris silvery with bluish areas.

20846. Tomahu Island. December 11, 1909. Length 73 mm.

PSEUDOCHROMIS RODWAYI Johnston

Pseudochromis rodwayi Johnston, Proc. Roy. Soc. Tasmania, 1902 (1903), p. 6. Macquarie Harbor, Tasmania.

Depth 5 (in total); head 4½. Body and head rather compressed, more or less elongate; eye lateral, greater than snout, nearly equals interorbital; mouth cleft slightly oblique, lower jaw protruding; front of both jaws with well curved canines, 3 lower stronger; narrow bands of small canines on vomer and palatines; opercle without spines; preopercle entire.

Scales moderate, ciliated, 50 ? in lateral series, 11 transversely; lateral line interrupted.

D. III, 26 or 27, produced posteriorly, half of anterior portion undeveloped or rudimentary, enveloped for most part in somewhat thick opaque integument; A. III, 17, produced posteriorly; pectoral rays 17.

Uniform dark brown.

Known from the type, 95 mm. long. (Johnston.)

PSEUDOCHROMIS NATALENSIS Regan

Pseudochromis natalensis Regan, Ann. Durban Mus., vol. 1, pt. 3, 1916, p. 167. Durban, Natal.—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 347 (reference).—Barnard, Ann. South African Mus., vol. 21, pt. 2, Oct. 1927, p. 493 (Natal).

Depth 3¾; head 3¾. Snout 4 in head; eye 4, equals snout, greater than interorbital; maxillary reaches ½ in eye; jaws equal; interorbital 6 in head. Gill rakers 10 on lower branch of first arch. Scales 48 in lateral series, 2 above, 13 below, 4 or 5 rows on cheek. D. III, 26, third spine largest, 4 in head, soft fin rounded posteriorly, when depressed reaches caudal; A. III, 17, second spine subequal but stronger than third, ⅗ of eye; caudal rounded; pectoral 1½ in head; ventral reaches ½ to anal. Olivaceous, back darker. Snout and vertical fins blackish. Length 90 mm. (Regan, Barnard.)

Natal coast. Said to be olive pink in life.

KLUNZINGERINA, new subgenus

Type.—Pseudochromis novae-hollandiae Steindachner.

Diagnosis.—Includes species with rounded caudal, dorsal rays 30 to 37 and anal rays 19 or 20.

(For Carl Benjamin Klunzinger, best known for his work on the Fishes of the Red Sea, also an excellent paper on the Müller collection of Australian fishes in the Stuttgart Museum, published in 1880.)

PSEUDOCHROMIS NOVAE-HOLLANDIAE Steindachner

Pseudochromis novae-hollandiae Steindachner, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 160. Port Davis [Port Denison], New Holland.—McCulloch, Mem. Queensland Mus., vol. 3, Jan. 28, 1915, p. 48, pl. 16, fig. 1 (Masthead Island).

? *Polycanthus queenslandiae* Kent, Great Barrier Reef, 1893, p. 308, pl. 16, fig. 8. Adolphus Island, Torres Strait [on color sketch].

Depth 3⅓; head 3½. Snout 4⅔ in head; eye 3⅓, greater than snout or interorbital; maxillary reaches ½ in eye, expansion 2 in eye; length 2⅗ in head; band of villiform teeth in front of each jaw, becoming uniserial laterally in jaws, 1 or 2 strong canines each side of symphysis; large patch of villiform teeth on vomer, smaller one on palatines.

Scales 56 (49 according to description) in median lateral series to caudal base and about 14 more on latter; upper section of lateral line with 40 to 43 tubular scales, lower section with 11 to 12 to caudal base and 1 or 2 more on latter; 5 scales above lateral line, 14 below, 10 predorsal forward to interorbital, 6 rows on cheek.

D. III, 35 to 37 (34, I on figure), third spine 3⅛ in head, thirty-second ray 1⅗; A. III, 20, third spine 3, eighteenth ray 1½; caudal 3⅕ in combined head and body to caudal base, ends in median point behind; least depth of caudal peduncle 1⅞ in head; pectoral 1⅒; ventral 1⅖.

Head and body dark brown, sides between pectoral fin tinged deep red. All fins except ventral very dark, almost black. Black blotch between dorsal spines and some narrow oblique dark lines on front rays. Length 87 mm. (McCulloch.)

According to McCulloch another, in life, with head and front part of body deep pink, rest of body sage green. Dark blue line round lower and hinder eye edges and 2 similar marks on cheeks. Dorsal bright green, margined with yellow and blue line; dark spot between spines and longitudinal series of spots near fin base. Anal like dorsal. Caudal sage green, with oblique scarlet and blue marginal band on each lobe.

PSEUDOCHROMIS SPENCEI Fowler

Pseudochromis spencei Fowler, Journ. Bombay Nat. Hist. Soc., No. 1, vol. 33, 1929, p. 112, pl. 1. Bombay.

Depth 3⅘; head 3⅕, width 2¼. Snout 4⅔ in head from snout tip, little broader than long; eye 3⅗ in head, greater than snout or interorbital; maxillary reaches slightly beyond front eye edge, expansion 2¾ in eye, length 3 in head; teeth conic, simple, uniserial in jaws, 4 canines in each anteriorly and small medio-lateral mandibular; no teeth on palate or tongue, latter pointed and free in front; interorbital 6⅙ in head, slightly convex; preopercle edge entire; opercle ends in broad, short, free spine. Gill rakers 5 + 10, lanceolate, ½ of gill filaments which 1⅔ in eye.

Scales 36 in upper section of lateral line, 8 in lower section to caudal base and 2 more on latter; 3 scales above lateral line, 14 below, 17 predorsal forward till midway in interorbital, 5 rows on cheek to preopercle ridge; muzzle naked; of fins only caudal scaled basally. Scales with 11 basal radiating striae; apical denticles 57, with 1 or 2 transverse series of basal elements; circuli fine.

D. III, 29, third spine 3¾ in total head length, third ray 2⅓; A. III, 18, second spine 6, eighth ray 2⅖; caudal 1⅕, convexly rounded behind; least depth of caudal peduncle 2¼; pectoral 1⅗; ventral 1⅘.

Back brownish, below paler. In postocular, at upper juncture of preopercle short dusky bar size of pupil. Iris gray. Under surface of head and body pale to whitish. Dorsals, caudal, and anal pale gray. Dorsal and anal with numerous, obscure, dark longitudinal lines.

Known only from the type in the Academy of Natural Sciences of Philadelphia; obtained at Bombay; 53 mm. long.

PSEUDOCHROMIS PERSICUS Murray

Pseudochromis persicus Murray, Journ. Bombay Nat. Hist. Soc., No. 1, vol. 2, 1887, p. 49. Persian Gulf; Indian Annals Mag. Nat. Sci., vol. 1, 1887, p. 24.—Regan, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 330 (Persian Gulf).

Depth 4½ (in total), equals space between snout tip and hind preopercle edge. Snout equals eye. Scales in upper section of lateral line 55, in lower section 10; scales transversely 15; opercles scaly; caudal scaly ½ its length. D. III, 30; A. III, 19; dorsal and anal produced posteriorly and pointed; posterior dorsal rays and all rays of anal, caudal and paired fins branched; pectoral rays 18; ventral I, 5. Pale fleshy on body. Head and snout brown, two longitudinal pale bluish white lines on preopercle. Black spot behind opercle with vertical bluish white line through its anterior third. Body covered with scattered blue spots. Dorsal, anal and caudal with faint blue spots, not unlike broken up undulating lines. Young with dark brown line running from snout through eye to end of dorsal fin, which disappears with age. (Murray.)

Known only from the Persian Gulf. Size not given.

PSEUDOCHROMIS SPLENDENS, new species

Depth 2⅞; head 3⅓, width 2. Snout 4⅖ in head from snout tip; eye 4, little greater than snout or interorbital; maxillary reaches ⅛ in eye, nearly vertical, expansion 2 in eye, length 2⅖ in head from snout tip; teeth uniserial, small, conic in jaws, pair of wide set canines in front of each; small band of fine teeth on each palatine and across vomer, tongue smooth; interorbital 4⅔, convex. Gill rakers 4 + 13, lanceolate, ⅘ gill filaments, which 1¾ in eye.

Scales 34 in median lateral series to caudal base and 10 more on latter; tubular scales 23 (25 on right side of body) in upper section of lateral line, 12 in lower section to caudal base and 2 more on latter; 4 scales above lateral line, 11 below, 14 predorsal forward opposite front pupil edge, 5 rows on cheek. Muzzle, including preorbital and maxillary, naked. Scales with 12 to 22 basal radiating striae; apical denticles 77 to 118; circuli very fine.

D. III, 29, i, third spine 2⅗ in total head length, third ray 1½, twenty-fifth ray 1; A. III, 15, i, third spine 3, third ray 2, twelfth ray 1⅛; caudal 1, rounded convexly behind; least depth of caudal peduncle 1¾; pectoral 1⅓; ventral 2⅔ in combined head and body to caudal base.

Light brown, paler on lower head, breast and belly. On body each scale with gray white spot, thus forming about a dozen longitudinal whitish bands. Iris neutral slate. Deep brown band forward from each side of occiput to eye, little narrower than eye and then down behind maxillary across cheek, arching on subopercle. Dorsals and anals, former with slightly lighter margin above and with very numerous, oblique, narrow, whitish waved lines, mostly broken as short white bars or spots and inclined so as to form parallel and posteriorly. Caudal light yellowish, small brown medial basal spot. Pectoral pale brownish. Ventral blackish medially, broadly whitish on outer border, more narrow on inner.

Diagnosis.—Known by the dark brown or blackish transverse band extending down from each side of the occiput through the eye and across cheek behind maxillary.

Type.—Cat. No. 89991, U.S.N.M.

2104. Doworra Island, Dutch East Indies. December 2, 1909. Length 97 mm.

Subgenus PSEUDOCHROMIS Rüppell

Caudal truncate or trifurcate to emarginate.

PSEUDOCHROMIS NIGROVITTATUS Boulenger

Pseudochromis nigrovittatus Boulenger, Ann. Mag. Nat. Hist., ser. 6, vol. 20, 1897, p. 421. Mekran Coast, Persia.—Regan, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 331 (Persian Gulf).

Depth 5 in total; head 4. Snout equals eye, which 4 in head and slightly exceeds interorbital; maxillary reaches opposite first third in eye. Scales 53, 2 above, 13 below; tubes in lateral line 33 to 35, 10. Cheek with 6 rows of scales. Large scales on opercle. D. II, 28, soft rays ⅔ of head; A. II, 15; caudal trifurcate, outer lobes longest; caudal peduncle long as deep; pectoral ⅔ of head, large as ventral. Olive brown above, yellowish white beneath. Black stripe each side of tail from snout tip through eye to middle caudal rays. Fins yellowish. Length 80 mm. (Boulenger.)

PSEUDOCHROMIS FLAVIVERTEX Rüppell

Pseudochromis flavivertex Rüppell, Neue Wirbelth., Fische, 1835, p. 9, pl. 2, fig. 2. Massaua, Red Sea.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 258 (Red Sea).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 21, 1871, p. 518 (name only); Fische Roth. Meer., 1884, p. 124.

Depth 3⅗; head 3⅗. Snout 3 in head from snout tip; eye 3⅘, 1⅛ in snout; maxillary reaches opposite front of eye, expansion 2 in eye, length 3 in head from snout tip; interorbital low. Scales 48 in median lateral series to caudal base and 3 more on latter; upper section of lateral line with 43 tubular scales, lower section with 11 to caudal base and 3 more on latter; 2 scales above lateral line, 10 below, 22 predorsal extending forward opposite front pupil edge, 4 rows on cheek of which 1 row on preopercle flange. D. III, 18, 9, third spine 2½ in total head length, ninth branched ray 1⅖, third spine 3 in head, first ray 2⅕; caudal 1⅛, emarginate behind; least depth of caudal peduncle 2; pectoral 1⅖; ventral 1.

Head, body and fins violaceous, except citron yellow dorsal fins and broad citron yellow band from front part of head all along edge of back and caudal above. Iris brown, with yellow ring around pupil. Lips and mouth yellowish. Bright lunate blotch behind eye. Anal with narrow blackish margin. Length 63 mm. (Rüppell.)

Red Sea.

PSEUDOCHROMIS OLIVACEUS Rüppell

Pseudochromis olivaceus Rüppell, Neue Wirbelth., Fische, 1835, p. 8, pl. 2, fig. 3. Red Sea.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 257 (copied).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 21, 1871, p. 517 (Red Sea).—Schmeltz, Cat. Mus. Godeffroy, No. 5, 1877, p. 13 (Red Sea); No. 7, 1879, p. 44 (Red Sea).—Klunzinger, Fische Roth. Meer, 1884, p. 124.—Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 10, 1904, p. 544 (Djibouti, Red Sea).

Depth 3; head 3. Snout 3⅔ in head from snout tip; eye 5, 1¼ in snout; maxillary reaches opposite front eye edge, expansion ½ of eye, length 3 in head from snout tip; interorbital moderately high.

Scales 48 in median lateral series to caudal base and 4 more on latter; tubular scales 36 in upper section of lateral line; lower section with 11 to caudal base and 2 more on latter; 4 scales above lateral line and 12 below, 33 predorsal forward opposite eye center, 8 rows on cheek to preopercle ridge.

D. III, 17, 10, I, third spine 3⅕ in total head length, tenth branched ray 1⅛; A. III, 15, third spine 3⅔, fifteenth ray 1⅖; caudal 2⅔ in combined head and body to caudal base, emarginate; least depth of caudal peduncle 2⅒ in total head length; pectoral 1½; ventral 1.

Dark olive green, many of lateral body scales with dark blue edges. Opercular lobe black. Iris brown, red ring around pupil. Fins colored like body, upper and lower caudal edges greenish yellow. Length 75 mm. (Rüppell.)

Red Sea.

PSEUDOCHROMIS POLYNEMUS, new species [2]

Depth 2½; head 3⅖, width 2. Snout 4½ in head from snout tip; eye 3⅔, greater than snout or interorbital; maxillary reaches ⅖ in eye, very oblique, expansion 1⅞ in eye, length 2⅖ in head from snout tip; teeth in narrow bands in jaws, little wider anteriorly, short, convex, with pair of small wide-set canines above and (abnormally) below 2 left anterior canines, close together; narrow band of fine teeth on vomer and small patch on each palatine, tongue toothless; interorbital 4⅓, convex; 5 short, flat denticles along upper opercle edge; preorbital narrow. Gill rakers 5+11, clavate, ¾ of gill filaments, which ½ of eye.

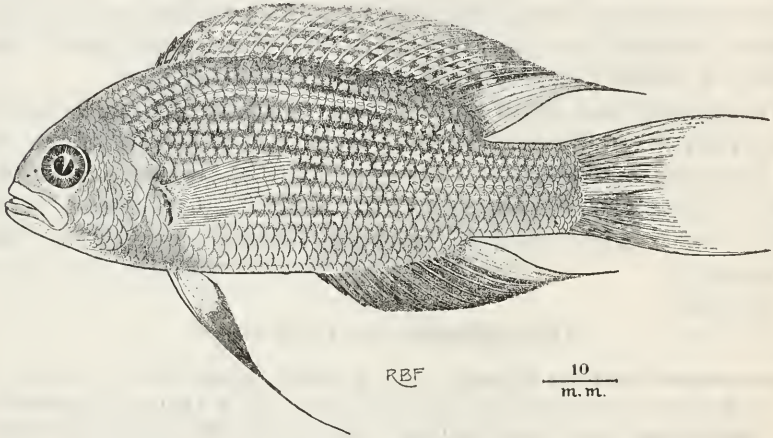

FIGURE 5.—PSEUDOCHROMIS POLYNEMUS, NEW SPECIES. TYPE

Scales 38 in median lateral series to caudal base and 8 more on latter; upper section of lateral line with 28 tubular scales, lower section with 10 of which one on caudal base (tubes irregular in sequence); 4 scales above lateral line, 12 below, 17 predorsal forward above nostrils, 4 rows on cheek and only narrow preopercle border naked. Suprascapula entire. Scales with 23 basal radiating striae; apical denticles 88, conic, rather slender; circuli very fine.

D. III, 27, I, third spine 3⅛ in total head length, twenty-second ray 2⅘ in combined head and body to caudal base; A. III, 15, I, third spine 3⅕ in total head length, tenth ray 3 in combined head and body to caudal base; caudal 2⅗, deeply lunate, with exserted filamentous tips; ventral 2⅓; least depth of caudal peduncle 1⅘ in total head length; pectoral 1⅕.

---

[2] Πολυς many; νημα thread; with reference to filaments on soft vertical and ventral fins.

Brown, little paler on lower sides of head and abdomen. Each scale on body with paler brown spot than body color, formed regularly to make longitudinal pale bands through scale courses medially, most distinct on back and sides above. Head largely uniform or without very distinct pale spots. Iris neutral gray. Dorsals and anals dusky brown, diminishing posterior rays whitish in each fin; rest of dark area on dorsal with about 5 series of small, well contrasted white spots, variable, above tending to form streaks, though margin of fin above slightly paler and rather broadly uniform; anal with large dark area immaculate. Caudal dull brown, paler posteriorly. Long filamentous ventrals whitish basally, terminally long rays dusky. Pectoral pale brownish.

Diagnosis.—The long filaments at the ends of the soft dorsal, anal, caudal and ventral lobes are diagnostic, the caudal deeply lunate. Coloration finely spotted. Unique in its great superficial resemblance to certain species of *Pomacentrus*.

Type.—Cat. No. 89992, U.S.N.M.

21366 [2041]. Limbe Strait, Celebes. November 11, 1909. Length 105 mm. General color slaty becoming pale below, with slight buff shade above ventrals and gray on throat; round buff spot in center of each scale covering most of breadth of scale; these become smaller on lower side and obsolete on peduncle; ochrey mark on lower rim of orbit dropping triangularly to nearly opposite point of maxillary, side of head otherwise unspotted with general buff olive shade; dorsal slaty with buff spots similar to those on side; about six or seven in each membrane becoming more or less bar-like terminally, but not encroaching on margin of fin, for about distance of breadth of pupil; last four or five rays hyaline, membranes very pale; anal similar to dorsal but with only two rows of spots, basal row fusing almost into bar, second rather obscure except on posterior portion of fin just in front of hyaline rays; caudal pale slaty; front of ventrals, including produced ray, slaty, bright scarlet blotch on lower portion at base of second to fifth rays becoming orange at margin and on interior of fin; pectoral hyaline; iris slaty.

PSEUDOCHROMIS MOOREI, new species

Depth 3 to 3⅓; head 3 to 3¼, width 2 to 2¼. Snout 4½ to 4⅘ in head from snout tip; eye 4 to 4½, greater than snout in young to subequal with age, greater than interorbital; maxillary reaches ¼ to ⅓ in eye, expansion 1⅞ to 2 in eye, length 2½ to 2⅔ in head from snout tip; teeth uniserial in jaws, strong, conic, 4 large canines in front of each, median upper smallest pair and much closer than 2 median lower which next in size; small curved band of fine teeth on vomer, also small patch on front of each palatine, tongue toothless; interorbital 6⅕, little convex; upper hind opercle edge with 5 flattened spines. Gill rakers 6+12, clavate, ¾ of gill filaments which 2¼ in eye.

Scales 39 to 41 in median lateral series to caudal base and 8 or 9 more on latter; upper section of lateral line with 37 or 38 tubular scales, lower section with 7 to 11 to caudal base and 1 or 2 more on latter; 2 or 3 scales above lateral line, 12 or 13 below, 13 to 20 predorsal forward opposite eye center or front eye edge, 6 to 8 rows on cheek. Scales with 11 or 12 basal radiating striae; apical denticles 40 to 42; circuli very fine.

D. III, 25 I, third spine 4 to 4¼ in total head length, twenty-first ray 1⅘; A. II or III, 13, I or 14, I, second spine 3⅞ to 5⅓, thirteenth ray 2⅕; caudal 1⅛ to 1⅕, well emarginate, each lobe as well developed point above and below; least depth of caudal peduncle 1⅘ to 2⅛; pectoral 1½ to 1⅗; ventral 1⅛ to 1½.

Light brown, scarcely paler below. On predorsal and back each scale marked by slightly darker spot. A grayish line, obscurely defined, extends from above maxillary up over and around eye edge.

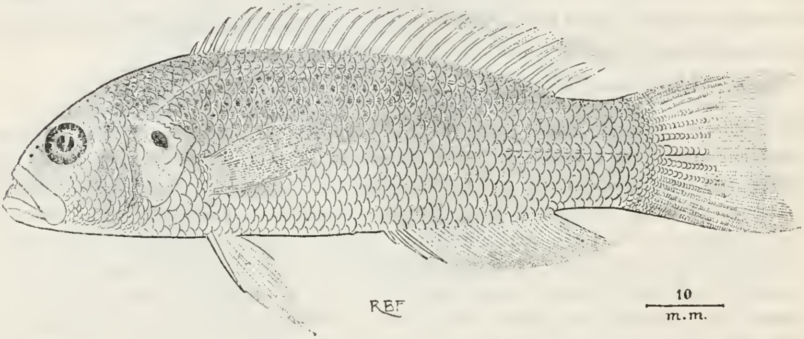

FIGURE 6.—PSEUDOCHROMIS MOOREI, NEW SPECIES. TYPE

Iris gray brown. Deep brown blotch size of pupil on opercle posteriorly below serratures. Fins all uniformly pale yellowish.

Diagnosis.—Known by its serrate upper opercular edge, emarginate caudal and dark opercular blotch.

Type.—Cat. No. 89993, U.S.N.M.

16635 [D. 5146]. Sulade Island. February 16, 1908. Length 100 mm. [105.] [Type.]

4439 [D. 5163]. Observation Island. February 24, 1908. Length 68 mm. One example.

[D. 5254]. Linao Point N. 44° E., 0.7 mile (7° 05′ 42″ N., 125° 39′ 42″ E.), Gulf of Davao. May 18, 1908. Length 62 mm.

(For Dr. J. Percy Moore, of the University of Pennsylvania.)

PSEUDOCHROMIS CAUDALIS Boulenger

Pseudochromis caudalis BOULENGER, Ann. Mag. Nat. Hist., ser. 7, vol. 2, 1898, p. 134. Kurrachee in Sind.

Depth 4 in total head length; head 3¾. Snout 4½ in head; eye equals snout, slightly greater than interorbital; maxillary reaches below center of eye. Scales 55 in lateral series, 2 above, 15 below;

tubular scales 40 in upper section of lateral line, 15 in lower section; 6 rows of scales on cheek; large scales on opercles. D. III, 27, longest ray 2 in head; A. III, 16; caudal truncate; caudal peduncle long as deep; pectoral 1⅔; ventral little less than pectoral. Olive above, yellowish beneath. Black spot on opercle, close to upper end of preopercular border. Fins gray white. Two black streaks on caudal, near upper and lower borders. Length 100 mm. (Boulenger.)

Genus NEMATOCHROMIS Weber

Nematochromis WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 264. Type *Nematochromis annae* WEBER, monotypic.

Body oblong, compressed. Head pointed. Eye moderate. Mouth cleft straight, oblique. Jaws subequal. Teeth in jaws, also some canines; vomer and palatines toothed. Preopercle unarmed. Scales ctenoid. Head above, on sides and opercles scaly. Lateral line inconspicuous. Dorsal and anal with 2 weak spines and numerous simple and undivided rays. Caudal truncate. Ventral with feeble spine and 3 simple rays, of which first and second elongated.

Like *Pseudochromis* in the presence of palatine teeth, but differs in the scaleless vertical fins, in the nearly entire dorsal and anal rays and in the structure of the ventral fin.

NEMATOCHROMIS ANNAE Weber

Nematochromis annae WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 265, fig. 66. Sarasa, Postillion Islands; Solor Straits.

Depth 3⅞; head 3⅓. Snout 4⅛ in head from snout tip; eye 3⅕, greater than snout; maxillary reaches opposite ⅓ in eye, expansion 2 in eye, length 2¾ in head from snout tip; jaws with separated canines between fine teeth; vomer and palatines with teeth; interorbital slightly less than half of eye, very low.

Scales 30 in median lateral series to caudal base and 2 more on latter; upper section of lateral line with 30 tubular scales (figure shows about 24), lower section 15 (figure shows 16 on body and 1 on caudal base), 6 predorsal to occiput, 3 rows on cheek (figure shows 4). Top of head, muzzle and interopercle shown as naked in figure, also all fins except caudal base narrowly.

D. II, 26 or 27 (figure not showing spines, and shows rays 25), twenty-fourth ray 1¾ in total head length; A. II, 15 (figure not showing spines), thirteenth ray 1⅗; caudal 1⅖, little rounded behind; least depth of caudal peduncle 2⅖; pectoral 1¼; ventral 2⅛ in combined head and body without caudal, rays I, 3.

Yellowish brown, head, belly and caudal edge lighter. Vertical fins obscurely dusted darker, anal with front half darker. Paired fins hyaline. (Weber.)

Known from Weber's 2 examples, 33 to 40 mm. long.

Genus PSEUDOPLESIOPS Bleeker

Pseudoplesiops Bleeker, Nat. Tijds. Nederland. Indië, vol. 15, 1858, p. 215. Type *Pseudoplesiops typus* Bleeker, monotypic.

Body oblong, rather compressed. Head compressed. Eye lateral. Jaws equal, mouth cleft oblique, not curved. Maxillary not reaching beyond eye. Jaws with bands of teeth, outer partly enlarged; vomer toothed, palatines and tongue toothless. Preopercle unarmed. Pseudobranchiae present. Branchiostegals 6. Scales cycloid, large, 36 in lateral series. Head above and opercles scaly. Lateral line interrupted. One dorsal with 16 flexible nonpungent spines and 9 or 10 rays. Anal with small flexible spine and 15 rays which partly simple. Ventrals inserted before pectorals, with weak spine and 5 rays, of which front two simple.

PSEUDOPLESIOPS TYPUS Bleeker

Pseudoplesiops typus Bleeker, Nat. Tijds. Nederland. Indië, vol. 15, 1858, p. 217. Goram Island.—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 260 (copied).—Bleeker, Verh. Kon. Akad. Wet. Amsterdam, vol. 15, 1875, p. 30, pl. 3, fig. 1 (Goram; Amboina); Atlas Ichth. Ind. Néerland., vol. 9, 1877, pl. (5)388, fig. 3.—Regan, Trans. Linn. Soc. London, ser. 2, vol. 12, 1905, Zool., p. 228 (Chagos Archipelago; Peros, off Diamant Island).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 276 (Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 189 (on Bleeker).

Depth 3¼ to 3⅓; head 2⅖ to 2⅘, width 2⅛ to 2½. Snout 4⅓ to 4⅖ in head from snout tip; eye 3 to 3⅖, greater than snout or interorbital; maxillary reaches ¼ to ⅓ in eye, expansion 2¼ to 2⅖ in eye, length 2⅗ to 2⅘ in head from snout tip; teeth uniserial, conic, small, anteriorly in jaws several enlarged; narrow band of small teeth on vomer, none on palatines or tongue; interorbital 2¼ to 2½ in eye, nearly level. Gill rakers 6+10, lanceolate, short, equal gill filaments or ⅓ of eye.

Scales in 30 to 34 series in median lateral series to caudal base and 4 or 5 more on latter; 15 or 16 transverse scales from opposite anal origin, 12 predorsal scales forward opposite hind eye edge, 4 rows transversely on cheek. Scales with 23 to 26 radiating striae, with 1 to 4 basal marginals.

D. XIV to XVI, 9, i or 10, i, first rays simple, first branched ray 1⅖ to 1⅔ in total head length: A. VIII to XI, 6, i to 8. i. first rays simple, first branched ray 1⅗ to 1⅔; caudal 1¼ to 1⅖. convex behind; least depth of caudal penduncle 2 to 2⅛; pectoral 1⅖ to 1½; ventral 1⅛ to 2⅔ in combined head and body to caudal base.

Dull brown generally, but little paler below. Iris pale or whitish, edge of eye socket all around narrowly dusky. Fins brownish, membranes of vertical ones showing dusky. Caudal often dusky terminally.

Seychelles, East Indies, Philippines. Alcoholic examples often show in contrast the narrow dark ring around the edge of the eye socket.

One example. Biri Channel. June 1, 1909. Length 44 mm.
21627 [1616]. Caracaran, Batan Island. June 8, 1909. Length 55 mm.
One example. Endeavor Strait, Palawan. December 23, 1908. Length 53 mm.
Two examples. [719, 720.] Port Matalvi, Luzon. November 23, 1908. Length 60 to 61 mm.
One example. Philippines. Length 61 mm.
One example. Port Palapag. June 3, 1909. Length 62 mm.
Two examples. Rasa Island, Palawan. April 1, 1909. Length 35 to 51 mm.
Two examples. Romblon Reef. March 25, 1908. 437, 438. Length 56 to 58 mm.
48743 A.N.S.P. Philippines. Commercial Mus. Phila. Length 63 mm.

Family LOBOTIDAE

Body oblong, compressed, equally developed above and below. Snout short. Eye anterior. Mouth moderate, oblique. Maxillary without supplementary bone, sheathed throughout its length. Vomer and palatines toothless. Preopercle serrate. Branchiostegals 6. Vertebrae 24, of which 12 to 14 caudal. Air bladder present. Pyloric coeca 3. Bases of soft dorsal and anal thickened, scaly. Lateral line complete. Dorsal fin continuous, spines 12, depressible in shallow groove, rays 15 or 16. Soft dorsal and anal rays elevated. Anal spines graduated, 3 in number, not strong, rays 11 or 12. Caudal rounded. Ventral with spine and 5 rays, also with scaly axillary flap.

One genus, related to the Serranidae but differing in the toothless palate and shortened fore part of the head. Jordan[3] includes *Coius* Buchanan-Hamilton, 1822 and *Datnioides* Bleeker 1852, though they are not members of the Lobotidae.

Genus LOBOTES Cuvier

Lobotes Cuvier, Règne Animal, ed. 2, vol. 2, 1829, p. 177. Type *Holocentrus surinamensis* Bloch, monotypic.

Verrugato Jordan, Stanford Univ. Publ. Biol. Sci., vol. 3, No. 2, 1923, p. 195. Type *Lobotes pacificus* Jordan and Evermann, orthotypic.

Profile of head concave. Snout prominent. Lips thick. Upper jaw very protractile, lower protruded. Jaws with narrow bands of villiform teeth, outer row enlarged, conic, directed backward. Preorbital narrower than eye. Preopercle serrated. Scales moderate, ctenoid. Pectoral rounded.

---

[3] Stanford Univ. Publ. Biol. Sci., vol. 3, No. 2, 1923, p. 195.

LOBOTES SURINAMENSIS (Bloch)

Holocentrus surinamensis Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, p. 98, pl. 243. Surinam.—Walbaum, Artedi Piscium, vol. 3, 1792, p. 646 (on Bloch).—Schneider, Syst. Ichth. Bloch, 1801, p. 316 (Surinam).—Lacépède, Hist. Nat. Poiss., vol. 4, 1802, p. 341 (description in key).—Shaw and Nodder, Natural. Miscellany, vol. 20, 1809, pl. 859 (Surinam).

Holocentrus surinam Lacépède, Hist. Nat. Poiss., vol. 4, 1802, p. 384 (Surinam).

Lobotes surinamensis Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 319 (Surinam, Brazil, New York).—Day, Proc. Zool. Soc. London, 1865, p. 14 (Cochin, Malabar); Fishes of Malabar, 1865, p. 23; Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, pl. (33)311, fig. 4; vol. 8, p. 12 (Java, Madura, Sumatra, Padang, Singapore, Bintang, Banka, Borneo, Celebes, Ceram, Amboina, Waigiu).—Day, Fishes of India, pt. 1, 1875, p. 84, pl. 21, fig. 5; Fauna Brit. India, Fishes, vol. 1, 1889, p. 19, fig. 157.—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 186.—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 150 (Singapore).—Stead, Fishes of Australia, 1906, p. 94, fig. 39 (Queensland and New South Wales).—Lloyd, Rec. Indian Mus., vol. 1, 1907, p. 227 (Akyab).—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 11, pt. 2, 1908, p. 33 (Tugela River mouth, Natal).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 436 (Misaki, Japan); Mem. Carnegie Mus., vol. 6, No. 4, September 1914, p. 252 (Matsushima).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 324 (compiled).—McCulloch, Australian Zoologist, vol. 1, pt. 7, 1919, p. 57, pl. 24, fig. 206*a* (New South Wales).—Izuka and Matsuura, Cat. Zool. Specim. Tokyo Mus., Vertebr., 1920, p. 152 (Tokyo market).—Tanaka, Fishes of Japan, vol. 40, October 5, 1927, p. 775, pl. 168, fig. 468 (Tokyo market).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct., 1927, p. 638, pl. 27, fig. 1 (Natal and Zululand).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 192 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong).

Bodianus triourus Mitchill, Trans. Liter. Philos. Soc. New York, vol. 1, 1815, p. 418, pl. 3, fig. 10. Prowles Hook, New Jersey.

Lobotes erate Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 322. Pondicherry; Mahe; Malabar; Java; Trinquemale, Ceylon.—Valenciennes, Règne Animal Cuvier, Ed. Ill, 1839, pl. 31, fig. 1.—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1062 (Pinang, Malay Peninsula, Singapore).

Lobotes farkhari Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 324. Malacca.

Lobotes somnolentus Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 324. pl. 126. Santo Domingo.

Lobotes surinamensis var. *somnolentus* Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 375. Endeavour River. (Name only.)

Lobotes incurvus Richardson, Ichth. China Japan, 1846, p. 237. China Seas, Canton.

Lobotes citrinus Richardson, Ichth. China Japan, 1846, p. 237. China Seas, Canton.

Lobotes auctorum Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 338. North America, Cuba, Jamaica, Calcutta. type of *Lobotes incurvus, India.*—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (New Britain).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Macassar, South Celebes).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 476 (Luzon; Manila).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 54.

Lobotes pacificus (Gilbert) Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 3, 1898, p. 2857. Panama.

Depth $1\frac{9}{10}$ to 2⅕; head 2½ to 2¾, width 2⅛ to 2¼. Snout 4⅕ to 4½ in head from snout tip; eye 4½ to 7, 1 to 1⅗ in snout, 1¼ to 2⅛ in interorbital; maxillary reaches ⅓ to ½ in eye, expansion 1⅔ to 1¾, length 2⅘ to 2⅞ in head from snout tip; teeth in villiform bands in jaws with outer enlarged row, none on vomer, palatines or tongue; interorbital 3 to 3⅕, broadly convex; preopercle edge strongly denticulate, serrae little larger at angle, also little longer in young. Gill rakers 6+15, lanceolate, 1¾ in gill filaments, which equal eye.

Scales 43 or 44 in lateral line to caudal base and 5 or 6 more on latter; 9 or 10 scales above lateral line, 16 to 19 below, 31 to 33 predorsal forward above nostrils, 12 to 15 across cheek to angle of preopercle ridge. Suprascapula denticulate. Scales with 12 to 15 basal radiating striae; apical denticles 30 to 48, with 4 to 9 transverse series of basal elements; circuli very fine.

D. XI, 15, i to XII, 16, i, fifth spine 2¼ to 3 in total head length, sixth ray 1½ to 1⅗; A. III, 11, i, third spine 2⅓ to 2⅖, seventh ray 1¾ to 2½; caudal 1⅓ to 1⅖, convex behind; least depth of caudal peduncle 2⅕ to 2⅘; pectoral 1⅞ to 2; ventral 1¼ to 1⅖.

Umber, generally mottled variably with paler or darker. Often 3 or 4 neutral dusky round spots about size of pupil along base of soft dorsal, these more conspicuous in young. Latter sometimes with as many along anal base and two at caudal base. Dusky line extends from upper hind eye edge obscurely up toward front of spinous dorsal. Another from lower hind eye edge down to angle of preopercle ridge. Also pair of dusky bands parallel along each side of predorsal, each from above nostrils, narrowing upward. Vertical fins and ventrals all darker than body; in young caudal broadly margined whitish and outer edges of soft dorsal and anal same; with age whitish narrower and less conspicuous. Pectoral pale yellowish brown, dark blotch basally.

Natal, Madagascar, Seychelles, India, Ceylon, Andamans, Malacca, Pinang, Singapore, East Indies, Philippines, Cochin, China, Japan, Queensland, New South Wales. Also Panama and in the tropical Atlantic.

14185, 14186. Cebu market. August 24, 1909. Length 103 to 107 mm.
6116. Mansalay, Mindoro. June 4, 1908. Length 220 mm.
A789. Sebatic Island. October 1, 1909. Length 225 mm.
5070. Sandakan, Borneo. February 29, 1908. Length 172 mm.
5853, 5854. Kowloon market, China. October 22, 1909. Length 182 to 230 mm.
Two A.N.S.P. Hong Kong. H. W. Fowler. Length 305 mm.

Family PEMPHERIDAE

Body ovate or oblong, greatly compressed. Head moderate, obtuse, well compressed. Snout short, usually obtuse. Eyes lateral, moderate or large. Mouth terminal, oblique, scarcely protractile. Small teeth in jaws and on palate. Gill opening wide, membrane free and separated from isthmus. Gill rakers spinulose. Gills 4, slit after fourth. Pseudobranchiae present. Air bladder and pyloric coeca usually present (absent in *Leptobrama*). Stomach caecal. Intestine convoluted. Vertebrae 24, of which 14 caudal. Scales ctenoid or cycloid, moderate or small. Head nearly entirely covered with scales. Mucous system of head well developed. Lateral line complete, extends on caudal to ends of median rays; tubes simple, not reaching scale borders. Dorsal small, falciform, much shorter than anal and not scaly; spines slender, adnate and graduated; no procumbent dorsal spine. Anal with several short graduated spines. Caudal emarginate, lobes pointed and base scaly. Pectoral asymmetrical, placed below middle in body depth. Ventral inserted below pectoral, with spine and 5 rays, also axillary pointed flap present.

Small homogeneous shore fishes, known chiefly by their small compressed bodies with a small dorsal fin in contrast to the long, low anal. Widely distributed in the tropical Indo-Pacific and West Atlantic.

ANALYSIS OF GENERA

a^1. PEMPHERINAE. Eye large, without adipose lid; maxillary greatly expanded behind; pterygoids and tongue smooth; preorbital entire; gill rakers long, numerous; lateral line with short, wide tubes; dorsal fin premedian; anal low, begins below or behind dorsal.

b^1. Body elongate or only slightly ovate; teeth mostly uniserial in jaws; preopercle entire; anal naked, fin rays less than 30________**Parapriacanthus.**

b^2. Body ovate, deeper; teeth in jaws pluriserial; preopercle with 1 to 3 strong spines; anal scaly, soft rays over 30________________________**Pempheris.**

a^2. LEPTOBRAMINAE. Eye small, with adipose lid; maxillary spatulate, feebly expanded in front; pterygoids and tongue grooved; preorbital serrulate; gill rakers few, short; lateral line with long narrow tubes; dorsal postmedian; anal falciform, begins well before dorsal____________**Leptobrama.**

Genus PARAPRIACANTHUS Steindachner

Parapriacanthus STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, vol. 61, 1870, p. 623. Type *Parapriacanthus ransonneti* STEINDACHNER, monotypic.

Pempherichthys KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 21, 1871, p. 470. Type *Pempherichthys güntheri* KLUNZINGER, monotypic.

Parapempheris VON BONDE, Fisher, Mar. Biol. Surv. South Africa, Spec. Rep., No. 3, 1922 (1924), p. 11. Type *Parapempheris argenteus* VON BONDE, monotypic.

Body elongate, moderately deep, ovate, compressed. Head rather long, somewhat pointed. Eye large. Teeth uniserial in jaws. Preopercle smooth. Opercle without spine. Scales 60 to 80 in lateral line, mostly strongly ctenoid. Usually small scales on cheek. Dorsal with 4 or 5 spines and 7 to 12 rays. Caudal usually forked.

Small fishes of the Indo-Pacific; closely related to *Pempheris* though with more normal fishlike contour. I have not examined any of the species and the following arrangement is purely provisional.

ANALYSIS OF SPECIES

a^1. PARAPRIACANTHUS. Soft anal rays 18 ---------- **ransonneti.**
a^2. Soft anal rays 20 to 27.
  b^1. PEMPHERICHTHYS. Caudal tips pale or like rest of fin.
    c^1. Soft anal rays 20 ---------- **beryciformes.**
    c^2. Soft anal rays 22.
      d^1. Eye deeper than long [abnormal?] ---------- **güntheri.**
      d^2. Eye equally long as deep ---------- **unwini.**
    c^3. Soft anal rays 24 to 27 ---------- **elongatus.**
  b^2. PARAPEMPHERIS. Caudal tips black ---------- **argenteus.**

PARAPRIACANTHUS RANSONNETI Steindachner

Parapriacanthus ransonneti STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, vol. 61, 1870, p. 623, pl. 1, figs. 1–2. "Nangasaki" [Nagasaki].

Depth 3⅓; head 2⅘. Snout 4⅗ in head from snout tip; eye 2⅓, greater than snout; maxillary reaches ⅖ in eye, expansion ½ of eye, length 2 in head from snout tip; teeth very small, pointed, biserial, inner row somewhat longer than outer; interorbital low. Scales 70 (figure shows 78 in lateral line to caudal base and 4 more on latter), 5 above (figure shows 6), 16 below (figure shows 14 from anal origin), 45 predorsal forward midway in snout, 5 rows on cheek.

D. V. 9, I, first ray 1⅔ in total head length; A. III, 18, I, first ray 2⅕; caudal 1⅖, deeply emarginate; least depth of caudal peduncle 3⅕; pectoral 1⅓; ventral 2⅛.

Back reddish, side silvery white. (Steindachner.)

Japan.

PARAPRIACANTHUS BERYCIFORMES Franz

Parapriacanthus beryciformes FRANZ, Abh. Bayer. Akad. Wiss., Suppl. vol. 4, pt. 1, 1911, p. 33, pl. 6, fig. 46. Yokohama.

Depth 3⅛; head 3⅛. Snout 4⅛ in head from snout tip; eye 2⅖, greater than snout; maxillary reaches ½ in eye, expansion 2⅕ in eye, length 2 in head. Scales 80.

D. V, 7, first ray 1⅕ in head; A. III, 20.

Yellowish on back, scales dotted with dusky. Sides of head, breast and belly silvery. (Franz.)

Differs from *Parapriacanthus ransonneti* Steindachner in the form of the dorsal.

PARAPRIACANTHUS GÜNTHERI (Klunzinger)

Pempherichthys güntheri Klunzinger, Verh. zool. bot. Ges. Wien, vol. 21, 1871, p. 470. Red Sea.

Parapriacanthus güntheri Klunzinger, Fische Roth. Meer., 1884, p. 81, pl. 5, fig. 4.

Depth 3; head 3. Snout 5 in head from upper jaw tip; eye 3⅛, greater than snout; maxillary reaches opposite eye center, expansion 1½ in eye, length 1⅗ in head from snout tip; teeth small, uniform, (shown as) uniserial in jaws, on vomer and palatines; interorbital but little elevated. Scales 70 in lateral line (figure shows about 50).

D. V, 9, first ray 1¼ in total head; A. III, 22 (figure shows 21 branched rays), first ray 3; caudal 1¼, well emarginate; least depth of caudal peduncle 3; pectoral 1⅛; ventral 2. Rosy red. Head and side of breast brassy yellow. Length 60 mm. (Klunzinger.)

Red Sea. Evidently based on an abnormality, in which the eye is deeper than long. Possibly not distinct from *Parapriacanthus ransonneti.*

PARAPRIACANTHUS UNWINI (Ogilby)

Pempheris unwini Ogilby, Mem. Austral. Mus., vol. 2, 1889, p. 60. Lord Howe Island.

Pempheris unwinii Ogilby, Mem. Austral. Mus., vol. 2, 1889, pl. 3, fig. 1.

Parapriacanthus unwini Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 67 (name).

Depth 2⅞; head 2½. Snout 4⅘ in head from snout tip; eye 3, greater than snout; maxillary reaches ½ in eye, expansion 2¼ in eye, length 2⅓ in head from snout tip; teeth uniserial, small, sharp, in jaws and on vomer and palatines. Scales 67.

D. V, 8; A. III, 22. Brick red, head rather darker than body. Length 100 mm. (Ogilby.)

Lord Howe Island. Possibly not different from *Parapriacanthus güntheri.*

PARAPRIACANTHUS ELONGATUS (McCulloch)

Pempheris elongata McCulloch, Zool. Res. Endeavour, pt. 1, 1911, p. 47, pl. 4, fig. 1, Flinder's Island, Bass Strait and off Wilson's Promontory, Victoria.

Parapriacanthus elongatus Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 67 (name).

Depth 2⅞; head 2⅞. Snout 4½ in head from snout tip; eye 2½, greater than snout or interorbital; maxillary reaches ⅖ in eye, expansion 2½, length 2 in head from snout tip; teeth minute, uniserial in jaws, also uniserial or as very narrow band on vomer and palatines. Scales 70 in lateral line to caudal base and 12 more on latter.

D. IV or V, 10 to 12; A. III, 24 to 27.

Above closely speckled with minute brown dots forming grayish color. Breast, lower jaw and lips also dotted and specks extend into dorsal and caudal rays. Length 132 mm. (McCulloch.)

Differs from *Parapriacanthus unwini;* is much less spiny and with more numerous scales.

PARAPRIACANTHUS ARGENTEUS (Von Bonde)

Parapempheris argenteus Von Bonde, Fisher. Mar. Biol. Surv. South Africa, Rep. No. 3, 1922 (1924), p. 11, pl. 2, fig. 2. Natal coast, 33 fathoms.—Barnard, Annals South African Mus., vol. 21, pt. 2, Oct. 1927, p. 667 (Natal).

Depth 2⅘; head 2¾. Snout 3¾ in head from snout tip; eye 2⅘, greater than snout; maxillary reaches ⅓ in eye, expansion 2⅕ in eye, length 2 in head from snout tip; teeth minute, uniserial in both jaws, on vomer and palatines; interorbital apparently level. Scales 75 in lateral line; 7 scales above lateral line, 21 below, about 35 predorsal forward midway in interorbital, 8 rows on cheek to preopercle ridge.

D. V, 9, first ray 1⅘ in total head length; A. II, 23, first ray 2⅕; caudal 1¼, well forked; least depth of caudal peduncle 3⅓; pectoral 1⅓; ventral 2⅛. Silvery, especially anterior half of body and opercle, posterior half yellowish.

Scales on nape of neck with black spots and snout marked with black spots dorsally. Dorsal and ventral ends of caudal marked with black blotch. Length 70 mm. (Von Bonde.)

Off Natal.

Genus PEMPHERIS Cuvier

Pempheris Cuvier, Règne Animal, ed. 2, vol. 2, 1829, p. 195. Type *Pempheris touea* Cuvier = *Sparus ? compresus* Shaw, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1917, p. 128.

Priacanthopsis Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1906, p. 122. Type *Pempheris mülleri* Poey, orthotypic.

Catalufa Snyder, Proc. U. S. Nat. Mus., vol. 40, 1911, p. 528. Type *Catalufa umbra* Snyder, orthotypic.

Liopempheris Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 61 (66). Type *Pempheris multiradiata* Klunzinger, designated by Jordan, Genera of Fishes, pt. 4, 1920, p. 549.

Body rather deeply ovoid, tapering to narrow and small caudal peduncle. Head obtusely convex. Eye large, without adipose lids. Mandible usually projecting. Maxillary expanded behind. Teeth in narrow bands in jaws, none on tongue. Preorbital entire. Preopercle with 1 to 5 flattened spines about angle. Gill rakers long and numerous. Air bladder and pyloric caeca well developed. Scales usually ctenoid, sometimes whole side variably smooth, often with small auxiliary basal scales. Anal scaly, also caudal. Anal begins behind dorsal base, with more than 30 soft rays. Caudal emarginate or little forked.

A homogeneous group, often difficult of separation into well marked species. For completeness I also include the single extralimital American species.

As Cuvier includes but three species in *Pempheris*, as *P. touea*, *P. mangula* and *P. molucca*, the designation of *P. oualensis* Cuvier 1831 by Jordan, Tanaka and Snyder [4] is invalid.

ANALYSIS OF SPECIES

a^1. PEMPHERIS. Scales all ctenoid, well adherent.
  b^1. Scales large, 35 to 55 in lateral line to caudal base.
    c^1. Anal rays 36 or 37 ---------- **schwenkii.**
    c^2. Anal rays 42 or 43 ---------- **macrolepidotus.**
  b^2. Scales small, 60 to 75 in lateral line to caudal base.
    d^1. Anal rays 31 to 34; pectoral base black ---------- **analis.**
    d^2. Anal rays 35 to 40; pectoral base pale.
      e^1. Depth 2⅖ ---------- **klunzingeri.**
      e^2. Depth 2 to 2⅕ ---------- **compressus.**
a^2. PRIACANTHOPSIS. Scales largely cycloid, at least those on flanks, often only those on body edges weakly or partially ctenoid.
  f^1. Body without pale longitudinal bands.
    [g^1. Scales 47 to 49 in lateral line to caudal base; lower gill rakers 15 to 18; dorsal without black apical blotch, but fin with dark border, anal pale ---------- **mexicanus.**]
    g^2. Scales 50 to 60 in lateral line to caudal base; lower gill rakers 21 to 23.
      h^1. Pectoral without black basal blotch.
        i^1. Vertical fins without black edges ---------- **mangula.**
        i^2. Vertical fins edged black ---------- **vanicolensis.**
      h^2. Pectoral with black basal blotch; anal edge pale ---------- **oualensis.**
    g^3. Scales 62 to 67 in lateral line to caudal base; lower gill rakers 18; anal edge pale ---------- **itoi.**
    g^4. Scales 70 to 80 in lateral line to caudal base.
      j^1. Anal edge pale ---------- **nyctereutes.**
      j^2. Anal edge dusky ---------- **sasakii.**
  f^2. Body with 9 pale longitudinal bands ---------- **multiradiata.**

Subgenus PEMPHERIS Cuvier

Scales all ctenoid, well adherent.

PEMPHERIS SCHWENKII Bleeker

Pempheris schwenkii BLEEKER, Nat. Tijds. Nederland. Indië, vol. 8, 1855, p. 314. Batu Archipelago.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 510 (compiled).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 9, 1877, p. 8, pl. (1)383, fig. 3 (Sumatra).—NORMAN, Ann. Mag. Nat. Hist., ser. 9, vol. 9, 1922, p. 320 (Natal).—BARNARD, Ann. South Afric. Mus., vol. 21, fig. 2, Oct. 1927, p. 667 (Natal).

Pempheris schwenki BLEEKER, Arch. Néerland. Sci. Nat. Harlem, vol. 12, 1877, p. 53 (Sumatra, Batu).

Depth 2¼; head 3. Snout 4⅔ in head from snout tip; eye 2⅔, not quite twice snout length; maxillary reaches ⅔ in eye, expansion

---

[4] Journ. Coll. Sci. Tokyo, vol. 33, 1913, p. 137.

$2\frac{2}{5}$ in eye, length $1\frac{7}{8}$ in head from snout tip; teeth small; interorbital but little elevated. Scales 45 in lateral line, 35 between opercle angle and caudal base; 3 scales above lateral line, 14 below.

D. VI, 9 or 10 (11 branched rays on figure), first ray $1\frac{1}{4}$ in total head; A. III, 36 or 37, first ray $1\frac{1}{5}$; caudal $1\frac{1}{8}$, emarginate; least depth of caudal peduncle $3\frac{1}{5}$; pectoral $1\frac{1}{10}$; ventral $2\frac{1}{5}$.

Brownish golden, below pale or golden silvery. Iris yellowish rosy. Fins rosy. Dorsal broadly blackish or brownish apically. Anal violet, blackish basally. Caudal above, below and posteriorly margined blackish or brownish. Pectoral without basal black blotch. Length 119 mm. (Bleeker.)

Natal, East Indies.

PEMPHERIS MACROLEPIDOTUS (Schneider)

Kurtus macrolepidotus Schneider, Syst. Ichth. Bloch, 1801, p. 164. Tranquebar.

Pempheris macrolepidota Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 66 (compiled).

Pempheris molucca Cuvier, Règne Animal, ed. 2, vol. 2, 1829, p. 195 (on Renard, Poiss. Moluques, vol. 1, 1718, p. 15, 85).—Valenciennes, Règne Animal, Cuvier, Ill., Poiss., 1839, pl. 44, fig. 2 (Moluccas).—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1157 (Pinang).—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 509 (Madras, Malayan Peninsula, Moluccas).—Day, Fishes of Malabar, 1865, p. 108 (compiled); Fishes of India, pt. 2, 1876, p. 175 (not pl. 42, fig. 2).—Boulenger, Proc. Zool. Soc. London, 1889, p. 239 (Muscat).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 40.—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, 1908–1911, p. 178 (Durban).—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physikal. Klasse, vol. 26, 1913, p. 13 (Oman).—Pellegrin, Bull. Soc. Zool. France, vol. 30, 1914, p. 224 (Mahambo, Madagascar).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 320 (compiled).

Pempheris moluca Cuvier, Hist. Nat. Poiss., vol. 7, 1831, 304 (Moluccas, Batavia).—Richardson, Ichth. China and Japan, 1846, p. 244 (compiled).

Pempheris malabarica Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 308. Mahé, Malabar.—Day, Fishes of India, pt. 2, 1876, p. 175; Fauna Brit. India, Fishes, vol. 2, 1889, p. 100.—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 92 (Tuticorin).

Pempheris mangula (not Cuvier) Bleeker, Atlas Ichth. Ind. Néerland., vol. 9, 1876–1877, p. 6 (part).—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 285 part).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 666 (part).

Pempheris japonicus (Döderlein) Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Kl., vol. 48, pt. 1, 1884, p. 29. Tokyo.—Franz, Abh. Bayer, Akad. Wiss., Suppl. Band 1, 1911, p. 33 (Yokohama).—Jordan and Thompson, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 246 (Misaki).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., 1920, p. 156 (Kawajiri, Satsuma).

Catalufa japonica Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 227 (Toba).

Depth 2⅓; head 3¼. Snout 5 in head from snout tip; eye 2⅕, more than twice eye, equals postocular; maxillary reaches about ⅖ in eye, expansion 2⅕, length 1⅘ in head; interorbital apparently level. Scales 52.

D. V, 12 (9 in description), first ray 1⅕ in total head length; A. III, 42 (43 in description), first ray 2; caudal 1⅛; least depth of caudal peduncle 4⅛; pectoral 1⅛; ventral 1⅔.

Warm brown. Anal, caudal, and pectoral yellowish. Front of dorsal basally, also of anal and ventral deeper or more reddish brown than rest of body. In the figure apparently 2 of the anal rays little behind middle of fin were dusky brown. Length 150 mm. (Cuvier and Valenciennes.)

Arabia, Natal, Seychelles, India, Pinang, East Indies, Japan.

PEMPHERIS ANALIS Waite

Pempheris analis Waite, Trans. New Zealand Inst., vol. 42, 1910, p. 375, pl. 36. Denham Bay, Kermadec Islands.—Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 67 (copied).

Depth 2½; head 3. Snout 7 in head from snout tip; eye 2¼, greater than snout or interorbital; maxillary reaches ⅔ in eye, expansion 2⅘ in eye, length 2 in head from snout tip; narrow band of setiform teeth in jaws, on vomer and palatines. Scales 69 in lateral line to caudal base and 18 more on latter fin.

D. VI, 9; A. III, 31 to 34. Purplish brown, head lighter below. Golden spot behind eye. Dorsal, caudal and paired fins yellow Anal gray. Spines and tip of dorsal and axis and base of pectoral black, also first few anal rays black. Length 189 mm. (Waite.)

Near *Pempheris oualensis* Cuvier in color, but differing in the fewer anal rays.

PEMPHERIS KLUNZINGERI McCulloch

Pempheris klunzingeri McCulloch, Zool. Res. Endeavour, pt. 1, 1911, p. 47 (on Klunzinger).—Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 66 (compiled).

Pempheris mülleri (not Poey 1860) Klunzinger, Sitz. Ber. Akad. Wiss. Wien. vol. 80, pt. 1, 1879, p. 380, pl. 6. King George's Sound.

Depth 2½; head 3⅖. Snout 7 in head from snout tip; eye 2, 3½ times greater than snout; maxillary reaches ½ in eye, expansion 2⅗, length $1\frac{9}{10}$ in head from snout tip; teeth villiform; interorbital low, scarcely elevated. Scales about 90 in lateral line to caudal base (75 in description); 9 scales above lateral line, 27 below.

D. V, 10 (V, 11 on figure), first ray greater than head or 3 in combined head and body to caudal base; A. III, 39 to 40 (38 rays on figure), second ray 2⅓ in total head length; caudal 1¼, moderately concave behind; least depth of caudal peduncle 3; pectoral 1⅛; ventral 2⅓.

Clear reddish. Front edge and tips of dorsal, also lower anal edge, dusky. Length 170 mm. (Klunzinger.)

Queensland. Klunzinger's excellent figure is shown with variable dark blotches or cloudings on the body.

PEMPHERIS COMPRESSUS (Shaw)

Sparus? compressus Shaw, Journ. Voy. New South Wales, White, 1790, p. 267, pl., fig. 2. New South Wales.

Pempheris compressus Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 508 (Swan River; Port Jackson; Australia).—Schmeltz, Cat. Mus. Godeffroy, No. 6, 1877, p. 14 (Sydney).—Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. (352) 384 (Port Jackson).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 46 (Sydney).—Stead, Fish and Fisher. New South Wales, 1883, p. 17.—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 30 (Sydney).—Waite, Prelim. Rep. Thetis Exp., 1898, p. 28 (off Broken Head in 28 fathoms).—Stead, Fishes of Australia, 1907, p. 90 (New South Wales): Edible Fishes of New South Wales, 1908, p. 49, pl. 18.—Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 66 (metropolitan district New South Wales).

Pempheris compressa McCulloch, Australian Zoologist, vol. 1, pt. 2, 1919, p. 89, pl. 26, fig. 223*a*.

Kurtus argenteus Schneider, Syst. Ichth. Bloch, 1801, p. 164, pl. 41. New Holland. (On *Sparus ? compressus* Shaw.)

Pempheris touea Cuvier, Règne Animal, ed. 2, vol. 2, 1829, p. 195. (On *Sparus ? compressus* Shaw.)

Catalufa umbra Snyder, Proc. U. S. Nat. Mus., vol. 40, 1911, p. 528. Misaki, Sagami; vol. 42, 1912, p. 412, pl. 52, fig. 3.

Depth 2 to 2⅕; head 3 to 3¼, width 1¾ to 1⅘. Snout 4⅘ to 6 in head from snout tip; eye 2⅒ to 2⅕, greatly exceeds snout or interorbital; maxillary reaches ⅖ to ⅗ in eye, expansion 2¾ to 3 in eye, length 1⅘ to 1⅞ in head from snout tip; teeth very small and in narrow bands in jaws and on vomer and palatines, tongue toothless; interorbital 3 to 3⅖, convex. Gill rakers 11+24, lanceolate, slender, 1⅞ in eye, gill filaments ½ of gill rakers.

Scales 59 to 67 in lateral line to caudal base and 22 more on caudal medially; 11 or 12 scales above lateral line, 25 to 27 below, 40 to 42 predorsal forward till over front pupil edge. Scales all ctenoid. Scales with 8 basal radiating striae; apical denticles 23 to 24, with 3 to 5 transverse series of basal elements; circuli fine.

D. VI, 10, I or 11, I, first branched ray 1⅕ in total head length; A. III, 33, I to 38, I, first branched ray 1⅞ to 2⅕; caudal 1 to 1⅛, hind edge deeply lunate; least depth of caudal peduncle 2⅞ to 3; pectoral 1⅛ to 1⅕; ventral 1¾ to 1⅞.

Uniform dark brown or umber. Iris slaty brown. Dorsal brown, front edge broadly dusky. Front of anal dusky, rest of anal and caudal brownish. Pectoral pale brown. Ventral brown, dusky terminally.

New South Wales, Japan. A comparison of the type *Catalufa umbra* shows it to be synonymous. It shows gill rakers 10+21 and the edge of the gill opening along opercle and subopercle pale, also caudal base deep brown in contrast with fin.

29003 U.S.N.M. Port Jackson. Australian Museum. Length 167 mm.
59908 U.S.N.M. Port Jackson. D. Stead. Length 182 mm.
59909 U.S.N.M. Port Jackson. D. Stead. Length 164 mm.
68229 U.S.N.M. Misaki, Sagami, Japan. *Albatross* Collection 1906. Length 163 mm. Type of *Catalufa umbra*.

Subgenus PRIACANTHOPSIS Fowler

Scales largely cycloid, at least those on flanks, often only those on body edges weakly or partially ctenoid.

PEMPHERIS MEXICANUS Cuvier

Pempheris mexicana Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 308. Acapulco.
Pempheris mexicanus Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 978 (note on type).
Pempheris schomburgki Müller and Troschel, Hist. Barbados Schomburgk, 1845, p. 669, Barbados.—Steindachner, Sitz Ber. Akad. Wiss. Wien, vol. 48, 1863, p. 208 (Cuba).—Jordan, Proc. U. S. Nat. Mus., vol. 9, 1886, p. 38 (Havana); vol. 13, 1890, p. 317 (Bahia, Brazil).
Pempheris mülleri Poey, Mem. Hist. Nat. Cuba, vol. 2, 1860, p. 203. Cuba.—Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 978.—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1906, p. 122 (Saint Martin's, West Indies); 1919, p. 137 (same material).
Pempheris mullerii Cope, Trans. Amer. Philos. Soc., ser. 2, vol. 14, 1871, p. 472 (Saint Martin's example).
Pempheris poeyi Bean, Proc. U. S. Nat. Mus., vol. 8, 1885, p. 229. Havana.—Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 979 (copied).
Pempheris schreineri Ribeiro, Arch. Mus. Nac. Rio de Janeiro, vol. 17, 1915, fasc. Pempheridae, p. 2. Fernando Noronha.

Depth 2¼ to 2⅗; head 3 to 3⅛, width 2 to 2⅛. Snout 3⅘ to 4⅓ in head from snout tip; eye 2⅖ to 2⅗, greater than snout or interorbital; maxillary reaches ⅓ to ⅖ in eye, expansion 2⅕ to 3 in eye, length 1⅞ to 2 in head from snout tip; teeth in villiform bands in jaws, on vomer and palatines, none on tongue; interorbital 3½ to 3⅘, convex. Gill rakers 5 or 6+15 to 18, lanceolate, 2⅛ in eye; gill filaments ⅗ of gill rakers.

Scales 47 to 49 in lateral line to caudal base and 15 to 17 more on caudal medially; 1 to 4 scales above lateral line, 16 to 18 below, 35 predorsal forward nearly to front edge of snout. Scales largely cycloid, only few along edges of predorsal, caudal peduncle, back and chest slightly or weakly ctenoid. Scales with 8 to 10 basal radiating striae; circuli very fine.

D. IV or V, 8, i or 9, i, first branched ray 1⅓ to 1⅖ in total head length; A. III, 24, i and 32, i, first branched ray 2¼ to 2½; caudal

1⅕ to 1¼, deeply emarginate; least depth of caudal peduncle 4⅛ to 4⅕; pectoral 1⅕ to 1¼; ventral 2¼ to 2½.

Brown above, sides and below silvery white. Iris white. Fins all pale except broad deep brown border to dorsal. Anal uniformly pale, specked with dusky basally.

Brazil, Barbados, West Indies, Cuba, Yucatan, Pacific coast of Mexico.

I can not find that the nominal *Pempheris mülleri* or *Pempheris poeyi* are in any way valid. The latter is evidently founded on the younger stage of development with fewer anal rays. I have seen no large examples with so few branched rays, though small examples often have an increased number. At present a single species seems to occur in the western Atlantic and is quite variable in its extremes. *Pempheris polio* Breeder (Bull. Bingham. Oceanog. Coll., vol. 1, art. 1, 1927, p. 32, figs. 15–16, Isle of Pines and Cuba) is scarcely different.

4721 U.S.N.M. Cuba. Felipe Poey. Length 105 mm.

24957 U.S.N.M. Cuba. Felipe Poey. Length 110 mm., in poor condition. Type of *Pempheris mülleri.*

35106 U.S.N.M. Havana, Cuba. D. S. Jordan. Length 115 mm.

37111 U.S.N.M. Cozumel, Yucatan. *Albatross* Collection. Length 26 to 47 mm. 37 examples.

37184 U.S.N.M. Cuba. Felipe Poey. Length 53? mm. (caudal damaged). Type of *Pempheris poeyi.*

37474 U.S.N.M. Cuba. Felipe Poey. Length 59 to 65 mm. 8 examples.

37502 U.S.N.M. Cuba. Felipe Poey. Length 42 mm.

48325 U.S.N.M. Bahia, Brazil. *Albatross* Collection 1887. Length 120 mm.

PEMPHERIS MANGULA Cuvier

Pempheris mangula Cuvier, Règne Animal, ed. 2, vol. 2, 1829, p. 195 (on *Mangula kutti* Russell, Fishes of Coromandel, vol. 2, 1803, p. 10, pl. 114, Vizagapatam); Hist. Nat. Poiss., vol. 7, 1831, p. 304.—Rüppell, Neue Wirbelth., Fische, 1835, p. 36 (Mohila, Red Sea).—Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 509 (compiled).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 21, 1871, p. 469 (Koseir, Red Sea).—Day, Fishes of India, pt. 2, 1876, p. 175 (not pl. 42, fig. 3) (part).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 9, 1877, p. 6, pl. (1)383, fig. 2 (Pinang, Singapore, Java, Celebes, Timor, Halmaheira, Amboina).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 46 (Huahine, Society Islands).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 30 (Huahine).—Klunzinger, Fische Roth. Meer., 1884, p. 81.—Pellegrin, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).—Regan, Ann. Durban Mus., vol. 1, 1914–1917, p. 459 (Durban).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 227 (Natal).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct., 1927, p. 666 (part).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 191 (compiled).

Pempheris molucca (not Cuvier) Day, Fishes of India, pt. 2, 1876, p. 175, pl. 42, fig. 2 (Kurrachee).—Regan, Ann. Natal Gov. Mus., vol. 1, 1908, p. 245 (Kosi Bay).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 320 (part).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1923, p. 39 (Madagascar).

Pempheris rhomboidea Kossmann and Räuber, Wiss. Ergebn. Reise Küstengeb. Roth. Meers, vol. 1, 1877, p. 18 in key, pl. 1, fig. 4. Red Sea.

Pempheris rhomboideus Kossmann and Räuber, Wiss. Ergebn. Reise Küstengeb. Roth. Meers, vol. 1, 1877, p. 18.

Pempheris erythraea Kossmann and Räuber, Wiss. Ergebn. Reise Küstengeb. Roth. Meers, vol. 1, 1877, p. 18 (on *Pempheris mangula* Klunzinger 1871).

Pempheris russellii Day, Fishes of India, Suppl., 1889, p. 788 (on *Mangula kutti* Russell 1803); Fauna Brit. India, Fishes, vol. 2, 1889, p. 100, fig. 46.—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physikal. Klasse, vol. 26, 1913, p. 13 (Mekran).—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 364 (Travancore).

Liopempheris russelli Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 668, pl. 31, fig. 1 (Natal).

Pempheris affinis McCulloch, Zool. Res. Endeavour, pt. 1, 1911, p. 45, pl. 7, fig. 1. Off Nobby's Head, Newcastle, New South Wales; Port Jackson.

Liopempheris affinis Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 66 (Port Jackson to Newcastle).—McCulloch, Australian Zoologist, vol. 1, pt. 7, 1919, p. 89, pl. 26, fig. 224b.

Depth 2¼ to 2⅖; head 3 to 3⅓, width 1⅞ to 2. Snout 4⅛ to 4⅖ in head from snout tip; eye 2⅓ to 2⅖, greater than snout or interorbital; maxillary reaches ⅖ to ¾ in eye, expansion 2⅗ to 3¼ in eye, length 1⅔ to 1⅞ in head from snout tip; teeth fine, villiform, in bands in jaws, on vomer and palatines, none on tongue; interorbital 3⅓ to 3⅖, convex; infraorbital greatly narrower than maxillary expansion. Gill rakers 8 + 20, lanceolate, slender, 1¾ in eye, gill filaments ⅗ of gill rakers.

Scales 44 to 46 in lateral line to caudal base and 13 to 15 more on latter; 4 scales above lateral line, 12 or 13 below, 34 to 37 predorsal forward to snout tip. Scales largely cycloid, few along body edges as predorsal, chest and caudal peduncle slightly ctenoid. Scales with 9 to 11 basal radiating striae; circuli very fine.

D. IV or V, 9, i, first branched ray 1¼ to 1⅓ in total head length; A. III, 36, i to 38, i, first branched ray 2⅛ to 2½; caudal 1 to 1⅒, deeply concave behind; least depth of caudal peduncle 3 to 3⅛; pectoral 1⅒ to 1⅛; ventral 2 to 2⅛.

Brown, with dusky or swarthy appearance, also with violet and lilac reflections. Iris yellowish to neutral dusky. Dorsal grayish with front dusky border, often blackish apically. Caudal light brown or yellowish, with base and hind border dusky. Anal yellowish, with dusky base. Paired fins yellowish.

Red Sea, Natal, Madagascar, India, East Indies, Philippines, Tonkin, New South Wales. The synonymy is somewhat involved. *Mangula kutti* Russell is evidently the same as Day's fish. It shows about 60 scales counted along and close below the lateral line to the caudal base and 6 more on the latter, while the tubes indicating the lateral line are far more numerous and doubtless shown erroneously. All the fins are represented with dark borders, but are described "of a yellowish red."

Bleeker's figure of *Pempheris mangula* has been placed with this species by Day. It shows the eye 2½ in head from snout tip and the caudal simply little emarginate behind, also scales 54 above lateral line to caudal base. It also shows 5 rows of cheek scales of which only a single row on the infraorbital. Day's figure differs markedly in that 6 rows of cheek scales are shown as counted to the preopercle ridge, leaving a broad naked flange all around.

Pempheris rhomboideus Kossmann and Räuber is described and figured:

Depth 2⅕; head $2\frac{9}{10}$. Snout 6¼ in head; eye 2⅛; maxillary nearly reaches ½ in eye, expansion 3¼ in eye, length 2 in head from snout tip; interorbital 1¾. D. VI, 9; A. III, 37. Silvery, with very fine red brown dots, fins colorless, with dark dots. Dorsal tip black. Length 140 mm.

Pempheris affinis McCulloch is described with more scales in the lateral line, or about 60 to caudal base and the lower gill rakers on the first arch 23. Everywhere closely speckled with minute reddish brown dots, more crowded on back and head. Dorsal, caudal and ventral tipped black. Anal with narrow black band. Length 135 mm.

22111, 22112. Alimango Bay, Burias Island. March 5, 1909. Length 98 to 129 mm.

16741. Baganga Bay, Mindanao. May 13, 1908. Length 124 mm.

9032 to 9034. Bongao anchorage, Tawi Tawi Group. February 24, 1908. Length 113 to 116 mm.

Three examples. Bolniao Bay, Luzon. May 10, 1909. Length 65 to 113 mm.

22052 to 22054. Butauanan Island, Luzon. June 13, 1909. Length 48 to 67 mm.

22813. Jolo. March 6–7, 1908. Length 128 mm. [419.] Brilliant metallic bronze on side and below; back very dark olive green with less of metallic shades. Iris dusky. Dorsal membranes pale, except very dark blotch near tip of fin, rays colored as body. Anal pale pink, base almost black, narrowly. Caudal like body color, tip more dusky. Pectoral pinkish, somewhat dusky in axil. Ventral pinkish, membranes hyaline.

13797 to 13799. Pratas Reef. October 25, 1908. Length 92 to 99 mm.

20336. Tutu Bay, Jolo, first anchorage. September 19, 1909. Length 83 to 138 mm. 38 examples.

13543, 13544, 19807 to 19809. Makyan Island, Dutch East Indies. November 29, 1909. Length 122 to 130 mm.

32720 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 125 mm.

41563 U.S.N.M. Samoa. C. H. White. Length 53 mm. In poor condition.

One example with 52354 U.S.N.M. Apia, Samoa. Bureau of Fisheries (02359). Length 120 mm.

56088 U.S.N.M. Bulan, Philippines. Bureau of Fisheries (3817). Length 51 mm. As *Pempheris vanicolensis.*

53071 A.N.S.P. Durban Bay, Natal. 1927. H. W. Bell Marley. Length?

53088 to 53092 A.N.S.P. Natal. 1925. H. W. Bell Marley. Length 73 to 128 mm.

One A.N.S.P. Madagascar. M. Lamberton. Length 122 mm.

PEMPHERIS VANICOLENSIS Cuvier

Pempheris vanicolensis Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 305. Vanicolo.—Bleeker, Atlas Ichth. Ind. Néerland., vol. 9, 1876–77, p. 7, pl. (1)383, fig. 6 (Singapore, Java, Celebes, Sangi, Timor, Ternate, Amboina).—Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 236 (Apia, Samoa).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 75 (Bulan).—Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 66 (Moluccas, Vanicolo, Samoa, Mauritius).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 193 (Biaru).

Liopempheris vanicolensis Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 12, June 27, 1925, p. 229 (Okinawa).

Pempheris nesogalliea Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 306. Mauritius.

? *Pempheris woodlarkensis* Thiollière, Fauna Woodlark, 1857, p. 170. Woodlark Island.

Pempheris mangula (part) Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 509.—Kner, Reise Novara, Fische, 1865, p. 171 (Ceylon).—Day, Fishes of India, pt. 2, 1876, p. 175.—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 191 (Apia).

Pempheris japonicus (not Steindachner and Döderlein) Snyder, Proc. U. S. Nat. Mus., vol. 42, 1922, p. 497 (Okinawa).

Depth 2⅛ to 2⅕; head 3⅛ to 3⅖, width 1¾ to 2. Snout 4½ to 5 in head from snout tip; eye 2⅓ to 2½, greater than snout or interorbital; maxillary ⅖ to ½ in eye, expansion 2¼ to 2¾, length 1⅘ to 2 in head from snout tip; teeth villiform, in bands in jaws, on vomer and palatines, none on tongue; interorbital 3 to 3⅓, convex; infraorbital width much less than maxillary expansion. Gill rakers 9+21, lanceolate, ½ of eye; gill filaments ¾ of gill rakers.

Scales 53 to 59 in lateral line to caudal base and 19 or 20 more out over caudal medially; 6 or 7 scales above lateral line, 12 or 13 below, 43 to 46 predorsal forward to snout tip. Scales with 13 or 14 basal radiating striae; circuli very fine; some scales on back with 36 or 37 weak, obsolete, minute denticles, also 2 or 3 transverse series of basal elements.

D. V or VI, 9, i, first branched ray 1⅛ to 1⅓ in total head length; A. III, 38, i to 44, i, first branched ray 1⅞ to 2⅛; caudal 1⅛ to 1⅕, concave behind; least depth of caudal peduncle 3 to 3⅛; pectoral 1⅛ to 1⅕; ventral 2 to 2⅛.

Brown, with drab dusky shades, each scale on sides below and on sides of head with pale drab median area. Iris yelowish, with neutral gray shades. Dorsal pale brown, with blackish apical blotch. Caudal gray brownish, edges dusky to blackish though not sharply defined. Anal pale brown, with broad blackish margin, base of fin often with deep brown specks. Paired fins uniformly pale brownish.

Mauritius, Ceylon, East Indies, Philippines, Riu Kiu, Melanesia, Polynesia. My examples differ a little from Bleeker's figure in that he does not show the black apical blotch on the dorsal or the black edges to the caudal and anal fins. Also most of specimens have the scales smooth, scarcely ctenoid.

Cuvier compares his *Pempheris vanicolensis* with Russell's *Mangula kutti* and says it has the same colors, red coppery on the body, fins yellowish, no dark pectoral spot though a black spot at the apex of the dorsal. D. VI, 9. A. III, 40. Length 180 mm.

Bleeker's figure of *Pempheris vanicolensis* shows scales along lateral line 53+17, the anal without a dark margin and but 5 rows of scales on the cheek, though of these 2 rows are on the infraorbital.

Pempheris nesogallica Cuvier is noted with the dorsal black apically, chest silvery and not coppery as over rest of body, fins yellowish and caudal apparently without blackish border. D. VI, 9. A. III, 38. Length 127 mm.

9213. Camp Overton, Mindanao. August 6, 1909. Length 159 mm.

22256. Canimo Island near Daet. June 15, 1909. Length 158 mm.

11380, 11381. Mahinog, Camiguin Island. August 3, 1909. Length 171 to 184 mm. Smaller example damaged.

22215. Rapurapu Island. June 22, 1909. Length 132 mm.

7075 [1755]. San Roque, Leyte. July 29, 1909. Length 124 mm. Usual bronzy color. Dorsal tip with black blotch. Raised front of anal black, color continued as marginal line on low fin; rays orange red. Caudal blackish. Pectoral yellow, dusky at base.

6377. Santo Domingo de Basco, Batan. November 7, 1908. Length 196 mm.

14144. Tifu Bay, Bouro Island, Dutch East Indies. December 10, 1909. Length 175 mm.

14084, 18189. Uki, Bouro Island. December 9, 1909. Length 160 to 195 mm.

17921, 17924, 18102. Tanakeke Island, Flores Sea. December 21, 1909. Length 149 to 189 mm. Upper portion olive. Lateral line pale. Dorsal tip and anal edge black. Edges and tip of caudal blackish. Pectoral yellow. Ventral orange red.

19953 U. S. N. M. Mauritius. Col. Nicholas Pike. Length 135 to 185? mm. 13 examples.

52354 U. S. N. M. Apia, Samoa. Bureau of Fisheries (02359). Length 160? to 179 mm. 2 examples.

56087 U. S. N. M. Bacon, Philippines. Bureau of Fisheries (3213). Length 160? mm.

PEMPHERIS OUALENSIS Cuvier

Pempheris oualensis Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 299. Oualan.—Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, Nov. 12, 1831, p. 168 (Oualan).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 9, 1876–1877, p. 6, pl. (1)383, fig. 5 (Java, Celebes, Timor, Halmaheira, Amboina).—Steindachner, Sitz. Ber. Akad. Wiss. Wien, vol. 115, pt. 1, 1906, p. 1376 (Savaii; Upolu).—Jordan and Seale, Bull. Bur. Fish., vol. 25, 1905 (1906), p. 236 (Samoa).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 254 (Calayan).—Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 497 (Okinawa).—Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 366 (Moluccas, Malaysia, Carolines, New Guinea, South Sea Islands).—Weber, Siboga Exp., vol. 57, 1913, p. 192 (Macassar; Gisser; Binongka).—Fowler, Bull. Bishop Mus., No. 22, 1925, p. 32 (Samoa); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 633 (Apia).

Pempheris otaitensis Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 304. Tahiti.—Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, Nov. 12, 1831, p. 167 (Tahiti).—Günther, Cat. Fish. Brit. Mus., vol 2, 1860, p. 568 (China; Amboina).—Kner, Reise Novara, Fische, 1865, p. 171 (Java).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 9, 1876–1877, p. 8, pl. 1(383), fig. 1 (Amboina; Banda).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 46 (Tahiti).—Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 265 (Hood Bay, New Guinea).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 30 (South Seas).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 23 (north Celebes; Cebu).—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 286 (type).—Seale, Occas. Pap. Bishop Mus., vol. 1, No. 3, 1900 (1901), p. 74 (Guam).—Regan, Ann. Durban Mus., vol. 1, 1914–1917, p. 169 (Durban).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1914–1917, p. 320 (compiled).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 666 (Natal).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 191 (Tahiti, Guam, Apia, Samoa, Society Islands).

Pempheris taitensis Cuvier, Hist. Nat. Poiss., vol. 7, 1831, pl. 191.

Pempheris mangula (not Cuvier) Günther, Journ. Mus. Godeffroy, vol. 4, pt. 11, 1875, p. 102, pl. 59, fig. B (Samoa, Vanicolo, Kingsmills, Carolines).—Seale, Occas. Pap. Bishop Mus., vol. 4, No. 1, 1906, p. 32 (Tahiti).

Pempheris adustus Bleeker, Arch. Néerland. Sci. Nat., vol. 12, 1877, p. 50. Amboina; Atlas Ichth. Ind. Néerland., vol. 9, 1876–1877, p. 7, pl. (1)383, fig. 1 (Amboina).—Fowler and Bean, Proc. U. S. Nat Mus., vol. 71, 1927, p. 6 (Poeloe Toekus, Sumatra).

Depth 2⅕ to 2⅓; head 3¼ to 3½, width 1¾ to 1⅞. Snout 4⅗ to 5 in head from snout tip; eye 2⅕ to 2½, greater than snout or interorbital; maxillary reaches ⅖ to ¾ in eye, expansion 2⅞ to 3 in eye, length 1⅔ in head from snout tip; teeth villiform, in broad bands in jaws, on vomer and palatines, none on tongue; interorbital 3 to 3⅛, convex. Gill rakers 10+21, lanceolate, slender, 1⅞ in eye; gill filaments ⅔ of gill rakers.

Scales 50 to 64 in lateral line to caudal base; 6 or 7 scales above lateral line, 15 or 16 below, 54 to 57 predorsal to snout tip. Scales largely cycloid, little ctenoid on lower surface of head and breast. Scales with 11 to 14 basal radiating striae; circuli very fine.

D. V or VI, 9, i or 10, i, first branched ray 1⅛ to 1⅕ in total head length; A. III, 39, i or 40, i, first branched ray 1⅘ to 2⅛; caudal 1, little emarginate behind; least depth of caudal peduncle 3 to 3⅛; pectoral 1 to 1⅕; ventral 1⅞ to 2.

Dark brown, sometimes coppery, generally with swarthy appearance, little paler on side of head and belly. Iris yellowish to dull brownish, with neutral gray shades. Dorsal light brown, with neutral dusky front border whole length. Caudal brownish like body, hind margin of upper lobe usually blackish. Anal brownish like body. Paired fins dull brown, with broad black blotch across base of former.

Natal, East Indies, Philippines, China, Riu Kiu, Melanesia, Micronesia, Polynesia. Readily known by the black blotch at the pectoral base, which sometimes small, again may cover whole base of fin. Variation is also noticeable with blackish hind edge of upper caudal lobe, which may be pale in some examples. Dark front border to dorsal always distinct and continuous.

17584. Biri Channel. June 2, 1909. Length 165 mm.
8870, 8871. Buang Bay, Talajit Island. March 15, 1909. Length 145 to 153 mm
11852. Caracaran, Batan Island. June 8, 1909. Length 160 mm.
7433. Dalaganam Island. April 8, 1909. Length 139 mm.
5699. Sabtan Island. November 8, 1908. Length 208 mm.
7076. San Roque, Leyte. July 29, 1909. Length 117 mm.
12196. Tataan, Simaluc Island. February 20, 1908. Length 154 mm.
19043. Varadero Bay, Mindoro. July 23, 1908. Length 160 mm.
6991. West coast Sabtan Island. November 9, 1908. Length 212 mm.
52327 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 174 to 211 mm 4 examples.

PEMPHERIS ITOI, new species

Depth 2⅒ to 2⅕; head 3⅒ to 3⅗, width 1¾ to 1⅞. Snout 4⅗ to 5 in head from snout tip; eye 2⅕ to 2⅗, greater than snout or interorbital; maxillary reaches ⅗ in eye, expansion 2⅛ to 2⅗ in eye, length 1⅘ to 1⅞ in head from snout tip; teeth fine, villiform, in bands in jaws, on vomer and palatines, none on tongue; interorbital 3⅛ to 3⅔, convex. Gill rakers 8+18, lanceolate, slender, 1¾ in eye; gill filaments ⅗ of gill rakers.

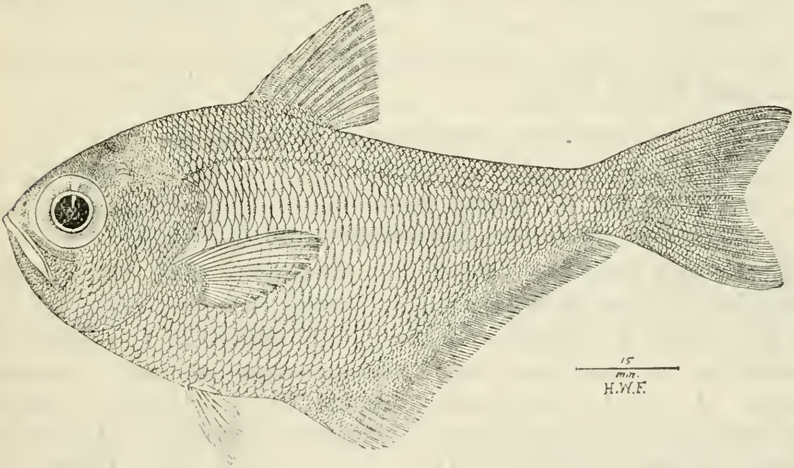

FIGURE 7.—PEMPHERIS ITOI, NEW SPECIES. TYPE

Scales 62 to 67 in lateral line to caudal base and 20 more on latter; 8 scales above lateral line, 16 to 18 below, 47 to 52 predorsal forward to snout tip. Scales cycloid along medial axil region of body and flanks, otherwise weakly ctenoid. Scales with 11 to 14 basal radiating striae; apical denticles 38 to 40, in 4 transverse series; circuli very fine.

D. IV to VI. 9, i, first ray $1\frac{1}{5}$ to $1\frac{1}{4}$ in total head length; A. III, 40, i to 42, i, first ray $2\frac{1}{8}$ to $2\frac{1}{3}$; caudal 1 to $1\frac{1}{8}$, deeply emarginate behind; least depth of caudal peduncle $2\frac{3}{4}$ to $2\frac{4}{5}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{5}$; ventral 2 to $2\frac{1}{10}$.

Body brown, with coppery and reddish brown tints. Iris white, with brown blotch. Dorsal dusky brown on front half, pale to whitish posteriorly. Anal brownish basally, whitish terminally. Caudal yellowish white, hind edge slightly dusky, little more so above. Paired fins yellowish white.

Diagnosis.—Known by its reduced gill rakers, increased scales and largely uniform coloration.

Type.—Cat. No. 89994, U.S.N.M.

Tanakeke Island, Flores Sea, Dutch East Indies. *Albatross* Collection (18103 [2176]). December 21, 1909. Length 139 mm. General color when fresh reddish brown with metallic reflections. Lateral line whitish. Fins similar to body, with red tints rather more pronounced, especially below; anal margin hyaline; caudal tip slightly dusky.

17922, 17923. Tanakeke Island. December 21, 1909. Length 132 to 134 mm. 2 examples.

(For K. Ito, in appreciation of his many color sketches of Philippine-East Indian fishes.)

PEMPHERIS NYCTEREUTES Jordan and Evermann

Pempheris nyctereutes Jordan and Evermann, Proc. U. S. Nat. Mus., vol. 25, 1903, p. 340, fig. 14. Hokoto, Formosa.—Jordan and Richardson, Mem. Carnegie Mus., vol. 4, No. 4, Aug. 28, 1909, p. 181, fig. 12 (copied).

Depth $2\frac{1}{3}$; head $3\frac{1}{5}$. Snout 5 in head from snout tip; eye $2\frac{2}{5}$, much greater than snout; maxillary reaches $\frac{1}{2}$ in eye, expansion $2\frac{1}{5}$ in eye, length 2 in head from snout tip. Scales 76 (on figure) in lateral line to caudal base and 15 more on caudal medially; 5 rows on cheek. D. V, 9 (IV, 19 on figure); A. III, 44 (43 on figure). Caudal but very slightly emarginate (evidently damaged). Olivaceous brown. Paired fins pale. Anal base dusky brown. Throat and under parts of head rusty brown. Length 200 mm. (Jordan and Evermann.)

A very imperfectly described nominal species, the type evidently poorly preserved.

PEMPHERIS SASAKII (Jordan and Hubbs)

Liopempheris sasakii Jordan and Hubbs. Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 228, pl. 10, fig. 1. Toba, Japan.

Pempheris molucca (not Cuvierq Schlegel, Fauna Japon., Poiss., pts. 5–6, 1844, p. 85, pl. 44, fig. 3 (part).

Depth $2\frac{1}{2}$; head $3\frac{2}{3}$, width $1\frac{9}{10}$. Snout 7 in head from snout tip; eye $2\frac{3}{5}$, much greater than snout; maxillary reaches $\frac{3}{5}$ in eye, expansion 2⅓ in eye, length 1⅞ in head from snout up; interorbital 4½. Scales 72 in lateral line to caudal base and 10 more on fin; 7 rows on cheek.

D. VI, 9; A. III, 41. Olive brown, silvery with black specks below eye and below and before paired fins' bases. Lateral line unpigmented streak. Dorsal broadly blackish along front edge and tip otherwise pale. Caudal light dusky, blackening toward free edge. Anal whitish basally, abruptly blackish on terminal half. Paired fins clear. Length 97 mm. to caudal. (Jordan and Hubbs.)

Possibly not distinct from *Pempheris nyctereutes*, though apparently with more scales on the cheek. Schlegel's figure of *Pempheris molucca* is poor, showing the caudal widely expanded and scarcely emarginate behind. Depth 2½, head 3½. Eye 2⅘ in head. D. 14; A. III, 36. Brown. Eye yellowish. Pectoral slightly reddish. Length 140 mm.

PEMPHERIS MULTIRADIATA Klunzinger

Pempheris multiradiata KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 381. King George's Sound.—MCCULLOCH, Zool. Res. Endeavour, pt. 1, 1911, p. 45 (off Bellingen, between Port Stephens and Newcastle, Shoalhaven Bight, Bass Strait, off Kingston, in 15 to 60 fathoms).

Liopempheris multiradiata OGILBY, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 66 (South Eastern Australia from Bellingen Heads, New South Wales to off Kingston, South Australia).—MCCULLOCH, Australian Zoologist, vol. 1, pt. 7, 1919, p. 89.

Pempheris macrolepis MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 516. King George's Sound and Port Jackson.—STEAD, Fish and Fisheries New South Wales, 1883, p. 17.—WAITE, Mem. Austral. Mus., No. 4, pt. 1, 1899, p. 73, pl. 10 (types of *P. macrolepis* and *P. lineatus;* off Broken Head in 28 fathoms).—STEAD, Fishes of Australia, 1907, p. 90 (New South Wales).

Pempheris lineatus OGILBY, Proc. Linn. Soc. New South Wales, vol. 10, 1886, p. 447. Shark Reef, Port Jackson.

Depth 2⅕; head 3⅕. Snout 5¾ in head from snout tip; eye 2, much greater than snout; maxillary reaches ⅖ in eye, expansion 2½ in eye, length 1⅘ in head from snout tip. Scales 49 in lateral line to caudal base and 11? more on latter; 7 rows on cheek, which entirely scaled. D. V, 12; A. III, 35; caudal obliquely emarginate behind, with upper lobe much longer. Body with 9 pale longitudinal streaks. Length 183 mm. (Waite.)

Genus LEPTOBRAMA Steindachner

Leptobrama STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, vol. 78, pt. 1, 1878 (1879), p. 388. Type *Leptobrama mülleri* STEINDACHNER, monotypic.

Neopempheris MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1880, p. 517. Type *Neopempheris ramsayi* MACLEAY, monotypic.

Body elliptical. Head small, conic. Snout obtuse. Eyes advanced. Mouth cleft covered. Maxillary slender. Teeth in several rows in jaws, small, cardiform, inner mandibular largest; diamond shaped patch on vomer; small band on each palatine; ectopterygoids, entopterygoids and tongue each with small ovate patch. Lower preopercle edge serrulate, angle widely membranaceous and without armature. Opercle without spine. Gill rakers stout. Branchiostegals 6. Scales small, adherent, ciliated, with very fine concentric striae and broad rough inframarginal band. Head, nape, and breast with scales much smaller than on body. Lateral line curved anteriorly. Dorsal with 4 spines and 16 to 18 rays. Anal with 3 spines and 26 to 30 rays. Caudal deeply emarginate. Pectoral short. Ventral rather small.

LEPTOBRAMA MÜLLERI Steindachner

Leptobrama mülleri STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, vol. 78, pt. 1, 1878 (1879), p. 388. Townsville, Cleveland's Bay, Queensland; Denkschr. Akad. Wiss. Wien, Math.-nat. Kl., vol. 41, pt. 1, 1879, pl. 3, figs. 1–1*c*.—KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 381 (Queensland).—STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, vol. 88, pt. 1, 1883, p. 1107 (note).—OGILBY, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 64, pls. 18–19 (Keppel Bay, Moreton Bay, types of *Neopempheris ramsayi* MACLEAY and *N. pectoralis* RAMSAY and OGILBY).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 191 (on OGILBY).

Neopempheris ramsayi MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 517, pl. 14. Rockingham Bay, Queensland.

Neopempheris pectoralis RAMSAY and OGILBY, Proc. Linn. Soc. New South Wales, vol. 2, ser. 2, 1887 (1888), p. 563. About 30 miles up Aird River, New Guinea.

Depth 2⅘ to 3⅓; head 4⅖ to 4½, width 1⅞ to 2. Snout 4⅓ to $5\frac{1}{10}$ in head; eye 3⅔ to 4¼, greater than snout; maxillary 1½ to 1¾ in head, expansion 2¼ in eye; interorbital 3¾ to 4½ in head, strongly convex. Gill rakers 3 or 4 + 6 or 7, also 1 or 2 rudiments above and below.

Scales 75 to 77 in lateral line, 10 to 12 above, 12 or 13 below. D. IV, 16 to 18, second ray 1¼ in head; A. III, 26 to 30, first ray 1¼; least depth of caudal peduncle 2¼; pectoral 1⅕; ventral 2; caudal 3⅗ in combined head and body to caudal base.

Silvery, back steel blue, line of demarcation well defined. Fins dusky, end of dorsal lobe with or without black or dark chestnut brown blotch. Length 300 mm. (Ogilby.)

New Guinea, Queensland.

Family PRIACANTHIDAE

Body oblong, ovoid, well compressed. Head moderate or large, deep. Snout short. Eye usually very large, nearly half length of head. Mouth cleft nearly vertical, large, lower jaw conspicuous. Maxillary exposed, not entirely slipping below very narrow preorbital. Teeth in jaws and on vomer villiform, none on palate. Nostrils paired. Postorbital region of head shortened. Preorbital often serrated. Opercle very short, ends in 2 or 3 points behind. Gill membranes separate, free from isthmus. Gills 4, slit behind fourth. Pseudobranchiae very large, all along whole length of opercle. Air bladder large. Pyloric coeca few. Vertebrae 22 or 23, of which 13 caudal. Scales firm, small, rough, more or less developed plate on hind edge. Ventral base without scaly flap. Lateral line complete, not extending on caudal base. Fin spines usually rough with small serrae. Dorsals continuous, spines depressible in groove, rays 9 to 15. Anal spines 3, rays like dorsal. Caudal with 16 principal rays. Pectoral small. Ventral large, with spine and 5 rays, close together before pectoral base and joined to belly by membrane which closes in groove.

Fishes of tropical and subtropical seas, usually in deep water, mostly moderate in size and bright rosy red in life.

ANALYSIS OF GENERA

a^1. Body oblong, depth less than half its length; scales small, 68 to 120 along or in lateral line to caudal base; dorsal and anal each with 11 to 16 branched rays -- Priacanthus.

a^2. Body deeper, ovate, depth more than half its length; scales large, rough, 30 to 56 in or along lateral line to caudal base; dorsal and anal each with 9 to 12 branched rays ------------------------------ Pseudopriacanthus.

Genus PRIACANTHUS Oken

Priacanthus OKEN, Isis, 1817, p. 1183. On *Les Priacanthes* CUVIER, Règne Animal, vol. 2, 1817, p. 281. Type *Anthias macrophthalmus* BLOCH, monotypic.

Abuhamrur FORSKÅL, Descript. Animal., 1775, p. 44. Type *Sciaena hamrur* FORSKÅL, by vernacular tautonym. (Inadmissible.)

Boops (not CUVIER 1815) GRAY, Cat. Fish. Gronow, 1854, p. 58. Type *Boops asper* GRAY=*Anthias boops* SCHNEIDER, monotypic.

Bogota BLYTH, Journ. Asiat. Soc. Bengal, vol. 29, 1860, p. 139. Type *Bogota infuscata* BLYTH=young *Priacanthus*, monotypic.

Cookeolus FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 190. Type *Anthias boops* SCHNEIDER, orthotypic.

Body oblong, strongly compressed, more than twice long as deep. Mouth large, protractile; cleft very oblique or nearly vertical. Maxillary broad, without supplemental bone. Teeth villiform, in jaws, on vomer and palatines. Tongue edentulous. Interorbital externally and transversely convex, cranium itself concave, elevation formed by muscle; prominent foramin in interorbital. Hind nostril long, slit-like. Preopercle denticulate, more or less flat spine developed at angle. Gill rakers large. Branchiostegals 6. Scales very small, 80 to 100 in lateral line, smooth or spinulose, with crescentic or angular sclerous plate on hind edge, less developed with age. Lateral line extends upward and backward from upper angle of gill opening toward second dorsal spine, below same changes course following outline of back to end of dorsal fin, then direct to caudal medianly. Tubes in lateral line straight, extend along whole scale length. Head entirely scaly. Dorsal single, with 10 spines and 12 to 15 rays, spinous portion of greater length than soft. Anal with 3 spines and 12 to 15 rays. Caudal truncate or lunate. Pectoral not symmetrical, pointed, rays 19 or 20, upper largest. Ventral very large, thoracic spine very strong, fins close together.

Species rather few in tropical seas.

ANALYSIS OF SPECIES

a^1. PRIACANTHUS. Ventrals moderate, shorter than head, or not exceeding head.
  b^1. Caudal truncate, or only very feebly emarginate, at least truncate as expanded.
    c^1. Lower gill rakers 17 to 19; dorsal and anal often with round gray or red spots, back often with dark cross bars or large spots------- **cruentatus.**
    c^2. Lower gill rakers 20 to 25.
      d^1. Dorsal, anal, and ventral membranes immaculate----------- **arenatus.**
      d^2. Dorsal, anal, and ventral membranes with variable though distinct round olive or brown spots-------------------------- **macracanthus.**
  b^2. Caudal crescentic, the lobes produced with age.
    e^1 Vertical fins not dusky or blackish; ventral without black basal blotch, though inner membrane with conspicuous round purple-black spots, largest near belly; lower gill rakers 17 or 18-- **tayenus.**
    e^2. Fins dark or dusky; ventral with small blackish basal blotch; lower gill rakers 20 to 24------------------------------------ **hamrur.**
a^2. COOKEOLUS. Ventrals enlarged, conspicuous, long as or half longer than head; lower gill rakers 17 or 18; caudal truncate or slightly convex------- **boops.**

Subgenus PRIACANTHUS Oken.

Ventrals moderate, shorter than head, or not exceeding head.

PRIACANTHUS CRUENTATUS (Lacépède)

Labrus cruentatus LACÉPÈDE, Hist. Nat. Poiss., vol. 3, 1800, pp. 452, 522. America [Martinique].

Priacanthus cruentatus CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 102 (on PLUMIER'S MS.).—MORRISON, Proc. Acad. Nat. Sci. Philadelphia, 1889, p. 162 (Havana).—BOULENGER, Cat. Fish. Brit. Mus., vol. 1, 1895, p. 352 (Bermuda, Jamaica, Saint Croix, West Indies, Samoa, Tahiti, Ponapé. Moluccas, Amboina, Zanzibar).—JENKINS, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 450 (Honolulu).—JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 229, fig. 94 (Honolulu, Hilo, Napoopoo, Kailua).—JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 261 (Apia); vol. 26, 1906 (1907), p. 20 (Cavite).—GILCHRIST and THOMPSON, Ann. South Afric. Mus., vol. 6, 1908-11, p. 147 (Durban).—KENDALL and GOLDSBOROUGH, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 286 (Papeete, Tahiti).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 214 (Binongka).—FOWLER, Copeia, No. 112, Nov. 20, 1922, p. 83 (Hawaii); Bull. Bishop Mus., No. 22, 1925, p. 26 (Honolulu).—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 498, pl. 21, fig. 2 (Algoa Bay; Natal).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 190 (Honolulu, Tahiti, Nukuhiva, Rarotonga, Papeete, Apia, Maui, Society Islands); Proc.

Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong), p. 633 (Hawaiian Islands; Honolulu).

Priacanthus cepedianus Desmarest, Mém. Soc. Linn. Paris, vol. 2, 1823, p. 9, pl. 1. Havana.

Serranus rufus Bowdich, Excurs. Madeira, 1825, p. 122. Madeira.

Priacanthus macrophthalmus (not Bloch) Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 97 (part).

Priacanthus boops (not Schneider) Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 103 (part).

Priacanthus carolinus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 105. Oualand ou Strong, l'une des Carolines.—Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, Nov. 12, 1831, p. 224 (Carolines).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 219 (copied); Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 17, pl. 18 (Tahiti; Raiatea).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 13 (Amboina, Banda); vol. 8, 1876–1877, pl. (73) 351, fig. 5.—Streets, Bull. U. S. Nat. Mus., No. 7, 1877, p. 72 (Honolulu).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 38 (Tahiti).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Yokohama, Japan).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Tahiti).—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 121 (type: Honolulu).

Priacanthus argenteus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 109 (on *Wabou-lang* Renard, Poiss. Moluques, vol. 1, 1718, pl. 12, fig. 72).

Priacanthus fulgens Lowe, Trans. Zool. Soc. London, vol. 2, 1837 (1841), p. 174. Madeira; Trans. Cambridge Philos. Soc., vol. 6, 1838, p. 196, pl. 2 (Madeira).

Priacanthus alalaua (part) Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 228 (Honolulu).

Priacanthus macracanthus (not Cuvier) Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 27 (Zamboanga).

Depth 2⅖ to 2¾; head 2¾ to 3⅕, width 1⅞ to 2⅕. Snout 3 to 3½ in head from snout tip; eye 1⅞ to 2⅞, much greater than snout or interorbital; maxillary reaches opposite ⅓ in eye, expansion 2 to 2¼ in eye, length 1⅞ to 2 in head from snout tip; bands of villiform teeth in jaws, on vomer and palatines, none on tongue; interorbital 3 to 3⅓, convex; peropercle edge minutely denticulate, with strong spine at angle flattened. Gill rakers 5 or 6+17 to 19, lanceolate, 2¾ in eye; gill filaments ¾ of gill rakers.

Scales 98 to 113 counted along (above) lateral line to caudal base and 5 to 12 more on latter; tubes 58 to 62 in lateral line to caudal base and 5 or 6 more on latter; 10 to 12 scales above, 42 or 43 below, 40 to 49 predorsal; 13 rows on cheek to preopercle ridge. Small suprascapula entire. Scales without basal striae; apical denticles 13; circuli fine.

D. X, 12, I or 13, I, fifth spine 2⅞ to 3½ in total head length; A. II or III, 14, I, third spine 2⅞ to 3, fourth ray 1⅞ to 2¼; least depth of caudal peduncle 3⅘ to 4⅕; caudal 1⅖ to 1½, truncate behind, convex as expanded; pectoral 1⅓ to 1⅔; ventral 1⅖ to 1½.

Back brown, sides and below pale brown. Iris light brown. Fins all with pale brown ground color. Dorsals show small, scattered, gray spots and marginally gray or brownish tints. Caudal and anal usually with less distinct though similar gray spots. Anal often with gray edge. Paired fins immaculate. Ventral variously dusky in young, paler with age.

Zanzibar, Durban, South Africa, East Indies, Philippines, Japan, Polynesia, Hawaii. Also in the Atlantic. Known chiefly by the gill rakers less than 20 on the lower branch of the first arch and the soft dorsal rays 13.

22573 [615]. Baganga Bay, east coast of Mindanao. May 15, 1908. Length 97 mm. Mottled silvery and reddish bronze. Silvery across eye to pupil center. Fins like body.

4719. Ligpo Point, Balayan Bay, Verde Island Passage. January 18, 1908. Length 266 mm.

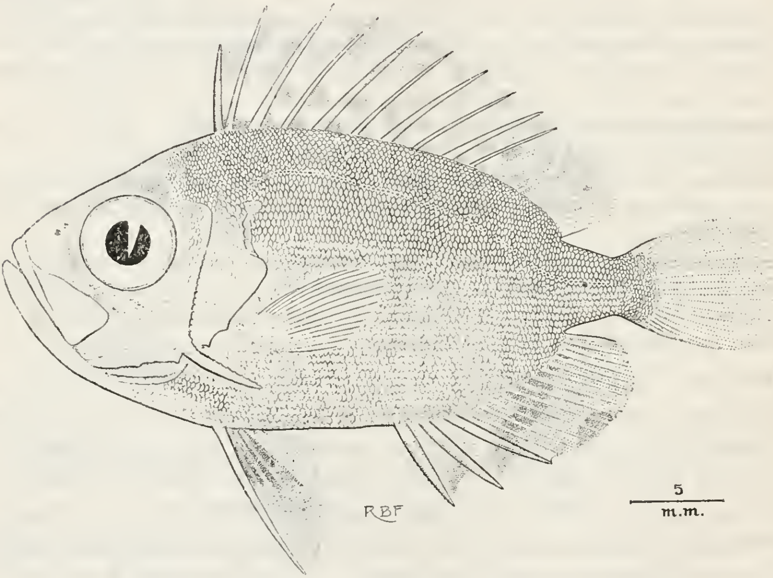

Figure 8.—Priacanthus cruentatus (Lacépède). Young

3453 [D. 5406]. Ponson Island, S. 88° E., 10.2 miles (10° 49′ 03″ N., 124° 22′ 30″ E.), vicinity Dupon Bay, Leyte. March 17, 1909. Length 145 mm.

14259. Port Palapag. June 3, 1909. Length 217 mm.

7097. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 265 mm.

4297 [D. 5574]. Simaluc Island, S. 66° E., 5.8 miles (5° 30′ 45″ N., 120° 07′ 57″ E.), north of Tawi Tawi. September 23, 1909. Length 43 mm.

13900. Sabtan Island. November 8, 1908. Length 176 mm.

6696. Singaan Island, between Jolo and Tawi Tawi. September 21, 1909. Length 190 mm.

3139 [1188] [D. 5375]. Tayabas Light, N. 49° W., 18.2 miles (13° 42′ 15″ N., 121° 50′ 15″ E.), vicinity Marinduque. March 2, 1909. Length 68 mm.

6774. Tictauan Island, east of Zamboanga. September 8, 1909. Length 248 mm.

6950, 6951. West coast of Sabtan Island. November 8, 1908. Length 240 to 242 mm.

3849 [5648]. North Island, N. 87° E., 10.2 miles (5° 35′ 00″ S., 122° 20′ 00″ E.), Buton Strait, Dutch East Indies. December 16, 1909. Length 42 mm.

A968. Binang Buang, Gulf of Tomini, Celebes. November 17, 1909. Length 230 mm.

18448. Maitara Island. November 26, 1909. Length 182 mm.

13579. Talisse Island, north of Celebes. November 9, 1909. Length 142 mm.

1298. Honolulu. *Albatross* Collection 1891. Length 227 mm.

17994 U.S.N.M. Honolulu. Dr. T. H. Streets. Length 18 to 85 mm. As *Priacanthus carolinus.*

51089 U.S.N.M. Hawaiian Islands. U. S. Fish Commission. Length 265 mm.

52330 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 228 to 254 mm. 2 examples.

52661 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 263 mm.

55098 U.S.N.M. Hawaiian Islands. *Albatross* Collection. Length 200 mm. As *Priacanthus alalaua.*

55099 U.S.N.M. Hawaiian Islands. *Albatross* Collection. Length 155 mm.

55470 U.S.N.M. Honolulu. Bureau of Fisheries. Length 197 mm.

55521 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 228 mm.

65994 U.S.N.M. Papeete, Tahiti. *Albatross* Collection. Length 212 mm.

84251 U.S.N.M. Zamboanga. Dr. F. Baker. Length 213 mm. As *Priacanthus macracanthus.*

86034 U.S.N.M. Foo Chow, China. A. Sowerby. Length 44 to 51 mm. 2 examples.

28080 to 28082 A.N.S.P. Hawaiian Islands. Bureau of Fisheries (05224, 05225, 04173). Length 138 to 212 mm.

51370 to 51378 A.N.S.P. Honolulu. Henry W. Fowler, 1922. Length 137 to 208 mm.

51381 A.N.S.P. Nukuhiva. Alvin Seale, 1902. Length 110 mm.

51382 to 51387 A.N.S.P. Honolulu. Bureau of Fisheries. Length 76 to 85 mm.

51388 A.N.S.P. Tahiti. Alvin Seale. Length 265 mm.

51389 A.N.S.P. Honolulu. J. W. Thompson. Length 248 mm.

52897 A.N.S.P. Hong Kong. 1929. Henry W. Fowler. Length 287 mm.

PRIACANTHUS ARENATUS Cuvier

Priacanthus arenatus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 101. Brazil and Atlantic Ocean.—Steindachner, Anz. Akad. Wiss. Wien, vol. 39, No. 24, 1902, p. 316 (Gischin); Denkschr. Akad. Wiss. Wien, Math.-nat. Kl., vol. 71, pt. 1, 1907, p. 127 (Hâulaf and Kalansiye, Sokotra; Makalla, South Arabia).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, May 21, 1917, p. 337 (not Port Shepstone and Durban Harbour records).

Priacanthus macrophthalmus (not Bloch) Cuvier, Hist. Nat. Poiss., vol. 3, 1831, p. 97 (Brazil, Martinique, Havana).—Kner, Reise Novara, Fische, 1865, p. 39 (Rio Janeiro).—Schmelz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (East Indies).

Priacanthus catalufa Poey, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 182. Cuba.

Depth 2⅗ to 3; head 3 to 3¼, width 1⅞ to 2. Snout 2⅖ to 3¼ in head from upper jaw tip; eye 2⅓ to 2⅞, greater than eye, much greater than interorbital; maxillary reaches ⅓ in eye, expansion 1¾ to 2 in eye, length 2 to 2⅓ in head from snout tip; teeth biserial, fine, outer row little enlarged and uniserial on sides of lower jaw;

narrow band of fine teeth on vomer and palatines; interorbital 4 to 4⅓, slightly convex; preopercle with short obtuse spine at angle. Gill rakers 6 or 7+21 to 25, lanceolate, 2½ in eye; gill filaments ⅘ gill rakers.

Scales 97 to 102 close along and above lateral line to caudal base and 7 to 9 more on latter; tubular scales 70 to 78 in lateral line to caudal base and 5 to 8 more on latter; 10 or 11 scales above lateral line to base of third dorsal spine, 34 to 37 below, 43 to 54 predorsal, 14 to 18 rows across cheek. Scales with 3 or 4 strong basal lobes; apical points about 11, become obliterated with age; circuli fine.

D. X, 14, tenth spine 2⅛ to 2⅖ in total head length, third ray 1½ to 2; A. III, 15 or 16, third spine 2⅓ to 3, third ray 1½ to 2⅗; caudal 1⅕ to 1⅖, truncate, very slightly emarginate with age; least depth of caudal peduncle 4 to 4¼; pectoral 1⅞ to $1\frac{9}{10}$; ventral 1 to 1⅖.

Brown, paler and with silvery white shades below. Fins all pale brownish. Ventrals with lower surfaces whitish, membranes with dusky tints.

While largely distributed in the tropical and subtropical regions of the Atlantic, also reported from the extreme west of the Indo-Pacific in Arabia and South Africa. The above description from examples obtained at Rio Janeiro, Brazil, in the collection of the Academy of Natural Sciences of Philadelphia; largest 270 mm. The species reaches 350 mm. and is known by its nearly immaculate red color in life.

PRIACANTHUS MACRACANTHUS Cuvier

Priacanthus macracanthus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 108. Amboina.—Lesson, Voy. Coquille, Poiss., vol. 2, pt. 1, Nov. 12, 1831, p. 225 (Amboina).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 220 (Japan).—Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. (349) 369 (Port Jackson).—Boulenger, Cat. Fish. Brit. Mus., vol. 1, 1895, p. 354 (Japan, Formosa, Banda, Arafura Sea, Port Jackson).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, vol. 1, 1897, p. 55.—Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 358 (Tokyo); Annot. Zool. Japon., vol. 3, 1901, p. 83 (Yokohama and Nagasaki).—Stead, Fishes of Australia, 1907, p. 262 (New South Wales and Queensland).—Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 40 (Yokohama; Aburatsubu).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 530 (Tokyo and Nagasaki).—Jordan and Metz, Mem. Carnegie Mus., vol. 6, No. 1, June 1913, p. 30 (Korea; Fusan).—McCulloch, Australian Zoologist, vol. 1, 1919, p. 49 (New South Wales).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., 1920, p. 154 (Tokyo market).—Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 232 (Osaka, Mikawa Bay, Fukui, Miyazu).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 190 (Honolulu, Maui ?, type of *Priacanthus meeki*); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 591 (Nagasaki), p. 633 (Honolulu).

Priacanthus dubius Schlegel, Fauna Japon., Poiss., pt. 1, 1842, p. 19. Japan.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 221 (copied).

Priacanthus benmebari Schlegel, Fauna Japon., Poiss., pt. 1, 1842, p. 19, pl. 7, fig. 1. Bays of southwest coast of Japan.—Richardson, Ichth. of China Japan, 1846, p. 237 (two of Bürger's Japanese specimens).—Bleeker, Verh. Batav. Genootsch. (Nal. Ichth. Japan), vol. 25, 1853, pp. 10, 25 (Nagasaki); (Nal. Ichth. Japan) vol. 26, 1857, p. 4 (Nagasaki); Act. Soc. Sci. Ind. Néerland., No. 3, vol. 3, 1857–1858, p. 2 (Kioesio), p. 5 (Japan).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1858, p. 218 (Japan); Ann. Mag. Nat. Hist., ser. 3, vol. 20, 1867, p. 57 (Sydney).—Schmeltz, Cat. Mus. Godeffroy, No. 6, 1877, p. 12 (Sydney).—Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. (349) 369 (Port Jackson).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 38 (Sydney).—Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 39 (Arafura Sea).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (North Celebes).—Nystrom, Svensk. Vet. Akad. Handl. Stockholm, vol. 13, 1887, No. 4 (Nagasaki).—Waite, Sci. Rep. Thetis, 1898, p. 25 (off Newcastle in 16 to 40 fathoms).

Priacanthus japonicus (not Cuvier) Bleeker, Nat. Tijds. Nederland Indië, vol. 2, 1851, p. 171 (Siboga, Sumatra).

Priacanthus blochii (part) Bleeker, Nat. Tijds. Nederland. Indië, vol. 4, 1853, p. 456 (Batavia and Siboga).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 218 (Moluccas, Amboina).—Playfair, Fishes of Zanzibar, 1866, p. 18 (Aden and Mozambique Channel).

Priacanthus bleekeri Castelnau, Proc. Zool. Acclim. Soc. Victoria, vol. 2, 1873, p. 100. Knob Island, North Australia.

Priacanthus hamrur (part) Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 125 (type of *Priacanthus macracanthus* Cuvier).

Priacanthus meeki Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 450, fig. 20. Honolulu.—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 231, fig. 95 (type; Honolulu; Hilo).—Fowler, Copeia, No. 112, Nov. 20, 1922, p. 83 (Hawaii).—Jordan, Evermann and Tanaka, Proc. California Acad. Sci., ser. 4, vol. 14, No. 20, 1927, p. 663, pl. 23, fig. 1 (Honolulu).

Priacanthus helvolus Jordan, Evermann and Tanaka, Proc. California Acad. Sci., ser. 4, vol. 14, No. 20, 1927, p. 664, pl. 23, fig. 2. Honolulu.

Depth 2¾ to 2⅞; head 2¾ to 3⅖, width 2 to 2⅛. Snout 3⅕ to 3¾ in head from snout tip; eye 2¼ to 2⅔, greater than snout or interorbital; maxillary reaches ⅖ to ½ in eye, expansion 1⅗ to 2 in eye, length 1⅞ to 2 in head from snout tip; teeth fine, short, uniform, in 2 or 3 irregular rows forming bands in jaws, on vomer and palatines; interorbital 3½ to 4⅛, slightly convex; preopercle edge minutely denticulate, ends in widely triangular spine in young, forms only as obtuse angle with age. Gill rakers 7+12, lanceolate, equal gill filaments or 2⅗ in eye, of which 4 or 5 above rudimentary.

Scales 85 to 96 counted along (above) lateral line to caudal base and 12 more on latter; tubes 66 to 68 in lateral line to caudal base and 8 more on latter; 12 to 14 scales above lateral line, 40 to 42 below, 56 predorsal forward to snout tip; cheek with 15 scales of which 5 on preopercular flange. Suprascapula entire. Scales with 23 small apical denticles and apical end of each scale with 3 or 4 transverse rows; circuli very fine.

D. X, 13 or 14, fifth spine 2 to $2\frac{2}{3}$ in total head length, third ray $1\frac{1}{2}$ to $1\frac{4}{5}$; A. III, 14 or 15, third spine $2\frac{1}{10}$ to $2\frac{1}{4}$, third ray $1\frac{7}{8}$ to 2; caudal $1\frac{1}{5}$ to $1\frac{3}{5}$, hind edge slightly convex; least depth of caudal peduncle $3\frac{7}{8}$ to $4\frac{1}{2}$; pectoral $1\frac{4}{5}$ to $1\frac{7}{8}$; ventral 1 to $1\frac{1}{4}$.

Back brown, sides and below silvery white. Iris yellowish white. Vertical fins pale brownish, membranes of all with more or less gray or pale dusky variable spots. Pectoral pale or whitish. Ventral whitish, with some gray spots, variable, always less contrasted or distinct than in *Priacanthus tayenus.*

Arabia, Mozambique, East Indies, Philippines, Formosa, Japan, North Australia, Queensland, New South Wales, Hawaii. Known by its light or pale coloration, never blackish on the vertical fins.

[1297] [D. 5386.] Arena Point, Luzon. S. 5° W., 25.3 miles (13° 30′ 30″ N., 122° 44′ 30″ E.). March 9, 1909. Length 123 mm.

3103 [D. 5516.] Point Tagolo Light, Mindanao, S. 80° W., 9.7 miles (8° 46′ N., 123° 32′ 30″ E.). August 9, 1909. Length 158 mm.

28673 U.S.N.M. No locality. Australian Museum. Length 215 mm.

28700 U.S.N.M. No locality. Australian Museum. Length 223 (?) mm.

42022 U.S.N.M. Port Jackson, New South Wales. Length 233 mm.

75474 U.S.N.M. Wakanoura, Japan. Jordan and Snyder. Length 277(?) mm.

85483 U.S.N.M. Formosa. Dr. F. Baker. Length 182 mm.

85995 U.S.N.M. Foochow, China. A. Sowerby.

29764 A.N.S.P. Honolulu. Stanford University. Length 90 mm.

31795 A.N.S.P. Hawaiian Islands. Bureau of Fisheries. Length 280 mm. As *Priacanthus meeki.*

51390 A.N.S.P. Honolulu. Bishop Museum. Length 130 mm.

PRIACANTHUS TAYENUS Richardson

Priacanthus tayenus Richardson, Ichth. China Japan, 1846, p. 237. Canton, China.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 221 (Canton).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 12 (Java, Sumatra, Singapore, Banka, Celebes, Amboina); vol. 8, 1876–1877, pl. (71) 349, fig. 4.—Sauvage, Bull. Soc. Philom. Paris, ser. 7, vol. 5, 1881, p. 104 (Swatow, China).—Boulenger, Cat. Fish. Brit. Mus., vol. 1, 1895, p. 355 (Canton; Madras, Sumatra).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 467 (Luzon, Ilocos, Vigan, Marinduque, Mindoro, Calapan).—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 524 (Padang).—Jordan and Seale, Proc. Davenport Acad. Sci., vol. 10, 1905, p. 10 (Hong Kong); Proc. U. S. Nat. Mus., vol. 29, 1906, p. 521 (Hong Kong).—Jordan and Richardson, Mem. Carnegie Mus., vol. 4, No. 4, Aug. 28, 1909. p. 192 (Takao, Formosa).—Fowler, Copela, No. 58, June 18, 1918, p. 63 (Philippines).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 26 (Takao).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 276 (Philippines); 1929, p. 608 (Hong Kong), p. 633 (Padang, Sumatra).

Priacanthus holocentrum Bleeker, Verh. Batav. Genootsch. (Percoid.), vol. 22, 1849, p. 48. Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 220 (Sumatra).—Károll, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Kobe, Japan).—Day, Fishes of India, Suppl., 1888, p. 784; Fauna Brit. India, Fishes, vol. 1, 1889, p. 482 (not fig. 148).—Elera, Cat. Fauna Filip., vol. 1, 1895 (Luzon, Cavite, Santa Cruz, Paragua, Puerta Princesa).—

Malpas, Ceylon Administr. Report, 1921, pp. E4, E5, E6, E8.—Pillay, Journ. Bombay Soc. Nat. Hist., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Priacanthus schmittii Bleeker, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. 572. Padang.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 220 (copied).

Priacanthus poecilopterus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 220, Sumatra. (Name in text.)

Depth 2¾ to 2⅞; head 2⅚ to 3, width 1⅞ to 2. Snout 3⅖ to 3⅘ in head from snout tip; eye 1⅞ to 2¼, greater than snout or interorbital; maxillary reaches ¼ to ⅖ in eye, expansion 2 to 2⅛, length 1⅘ to 1⅞ in head from snout tip; teeth in narrow bands, fine, simple, conic in jaws and on vomer, none on palate or tongue; interorbital 4⅛ to 4⅓, nearly level; preopercle spine 2½ to 3 in eye. Gill rakers 4 + 17 or 18, lanceolate, 2¾ in eye; gill filaments ⅘ in gill rakers.

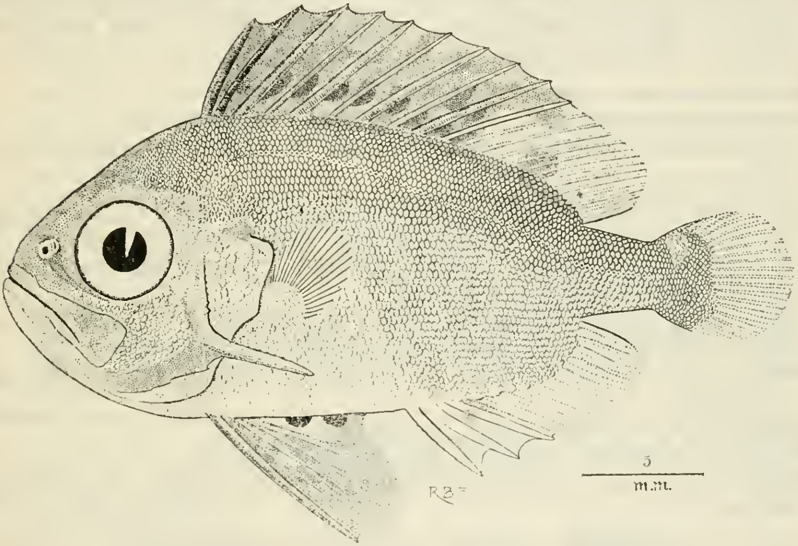

Figure 9.—Priacanthus tayenus Richardson. Young

Scales 68 to 70 counted along and above lateral line to caudal base and 5 to 8 more on latter; tubular scales 58 to 60 in lateral line to caudal base and 2 or 3 more on latter; 10 or 11 scales above lateral line, 30 to 33 below, 42 or 43 predorsal scales forward above nostrils, 14 or 15 rows across cheek to preopercle angle. Scales with 4 basal lobes; 10 to 12 apical denticles; circuli moderate.

D. IX or X, 11, I or 12, I, fifth spine 2⅖ to 2¾ in total head length, fourth ray 1⅛ to 1½; A. III, 13, I, third spine 2⅓ to 2⅗, fourth ray 1½ to 1⅘; caudal 1⅛ to 1¼, well emarginate; least depth of caudal peduncle 4 to 4⅛; pectoral 1⅘ to 2; ventral 1⅓ to 1⅕.

Light brown, pale to whitish on lower sides and below, sides also with silvery white tinge. Iris whitish or buff. Fins all pale or very light brownish, edges of dorsals, anals and caudal posteriorly dusky. Pectoral uniformly pale yellowish brown. Ventral whitish, membranes finely spotted or dotted with dusky to blackish, spots becoming larger and deeper on inner membranes so usually large black blotch on innermost membrane terminally nearly large as pupil.

East Indies, Philippines, Formosa, China, Japan. A handsome species reaching 225 mm. according to Boulenger. The dark spots on the white ventral fins are diagnostic. The young quite different from the adult in general appearance, with the entire spinous dorsal and ventrals dusky, though always with 1 or 2 black blotches on the innermost ventral membranes. They also have a long opercular spine and a truncate caudal fin.

1849. Cebu market. August 28, 1909. Length 46 mm.

6857. Kowloon market, China. October 22, 1908. Length 146 mm.

Four examples. Mansalay, Mindoro Island. June 3, 1905. Length 29 to 33 mm.

2428 to 2430 D. 5442. San Fernando Point Light, N. 39° E., 8.4 miles (16° 30′ 36″ N., 120° 11′ 06″ E.). May 11th, 1909. Length 90 to 130 mm.

6521 U.S.N.M. No Locality. William Stimpson. Length 242 mm. Caudal ends in long filaments ½ rest of body.

32729 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 167 mm.

56415 U.S.N.M. Hong Kong, China. P. L. Jouy. Length 62 mm.

76625 U.S.N.M. Takao, Formosa. Dr. F. Baker. Length 147 to 180 mm. 3 examples.

87058 U.S.N.M. Foo Chow, China. A. Sowerby.

27572 A.N.S.P. Padang, Sumatra. Harrison and Hiller.

52872, 52881 A.N.S.P. Hong Kong. 1929. Henry W. Fowler. Length 172 to 280 mm.

One A.N.S.P. Philippines. Commercial Mus. Phila. Length 72 mm.

PRIACANTHUS HAMRUR (Forskål)

Sciaena hamrur Forskål, Descrip. Animal., 1775, pp. xi, 45. Djedda, Red Sea.—Bonnaterre, Tabl. Ichth., 1788, p. 122 (Red Sea).—Gmelin, Syst. Nat. Linn., vol. 1, pt. 3, 1789, p. 1299 (Arabia).—Walbaum, Artedi Pisc., vol. 3, 1792, p. 313 (on Forskål).

Anthias hamrur Schneider, Syst. Ichth. Bloch, 1801, p. 307 (Red Sea).

Lutjanus hamrur Lacépède. Hist. Nat. Poiss., vol. 4, 1802, pp. 178, 209 (Arabia).

Priacanthus hamrurh Cuvier, Hist. Nat. Poiss, vol. 3, 1829, p. 104 (Lohaja).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 219 (Red Sea).—Playfair, Fishes of Zanzibar, 1866, p. 18 (Zanzibar).—Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 224 (Fort Dauphin, Madagascar).

Priacanthus hamrur Rüppell, Neue Wirbelth., Fische, 1835, p. 95 (name).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 21, 1870, p. 708 (Koseir).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873-1876, p. 13 (Java, Sumatra, Batu, Celebes, Sangi, Ternate, Batjan, Buru, Amboina); vol. 8, 1876–1877, pl. (75)353, fig. 3.—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 436 (Mauritius).—Bleeker, Versl. Meded. Akad. Wet. Amsterdam, vol. 7, 1878, p. 35 (Aru Islands).—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 235 (New Guinea).—STEINDACHNER and DÖDERLEIN, Denkschr. Akad. Wiss. Wien, Math-nat. Kl., vol. 47, pt. 1, 1883, p. 239 (Tokyo).—KLUNZINGER, Fische Roth. Meer., 1884, p. 17.—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 482.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891 p. 125.—BOULENGER, Cat. Fish. Brit. Mus., vol. 1, 1895, p. 355 (Red Sea, Zanzibar, Seychelles, Ceylon, Madras, Amboina, Japan).—JORDAN and SNYDER, Annot. Zool. Japon., vol. 3, 1901, p. 83 (Yokohama and Nagasaki).—REGAN, Trans. Linn. Soc. London, ser. 2, vol. 12, 1905, Zool., p. 224 (Amirante, Seychelles).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26 (1907), p. 78 (Bulan).—JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 257 (Calayan).—JORDAN and THOMPSON, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 528 (Calayan).—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9 p. 112 (Ambon).—MALPAS, Ceylon Administr. Report, 1921, p. E7.—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 27 (Takao).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 227 (Tugela River, Natal).—FOWLER and BALL, Bull. Bishop Mus., No. 26, 1925, p. 14 (French Frigates Shoal).—FOWLER, Mem. Bishop. Mus., vol. 10, 1928, p. 191 (Honolulu, Shortland Island, French Frigates Shoal, type of *Priacanthus alalaua*, Maui); Journ. Bombay Nat. Hist. Soc., vol. 33, No. I, 1928, p. 112 (Bombay); Proc. Acad. Nat. Sci. Philadelphia, 1920, p. 633 (Honolulu; Shortland Islands).

Priacanthus speculum VALENCIENNES, Hist. Nat. Poiss., vol. 7, 1831 p. 471. Mahe, Seychelles; Règne Animal, Cuvier, Ed. ill., 1839, pl. 11, fig. 1.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 221 (compiled).—GUICHENOT, Notes Ile Réunion, vol. 2, 1862, p. 24.—PLAYFAIR, Proc. Zool. Soc. London, 1867, p. 850 (Seychelles).—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 117, pl. 14, fig. 2-*a* (Bourbon Island, Seychelles, Mahé, Madagascar).

Anthias macrophthalmus BLOCH, Naturg. Ausländ. Fische, vol. 6, 1792, p. 115, pl. 319. Japan.—FORSTER, Fauna Indica, 1795, p. 16.—SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 304 ("Tranquebar").

Lutjanus macrophthalmus LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, pp. 179, 210 (no locality).

Priacanthus macrophthalmum SCHMELTZ, Cat. Mus. Godeffroy, No. 1, 1864, p. 8 (East Indies); No. 4, 1869, p. 13 (East Indies).

Priacanthus macrophthalmus SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 123 (part).

Priacanthus blochii (not BLEEKER) DAY, Fishes of India, pt. 1, 1875, p. 48, pl. 8, fig. 2, Suppl., 1888, p. 783.

Priacanthus ? pasoowa (ELLIOT) DAY, Fishes of India, pt. 1, 1875, p. 48. Madras.

Priacanthus elongatus (DÖDERLEIN) STEINDACHNER and DÖDERLEIN, Denkschr. Akad. Wiss. Wien, Math-nat. Kl., vol. 47, pt. 1, 1883, p. 237 (name in text).

Priacanthus alalaua JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 181. Honolulu.—SNYDER, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 527 (Honolulu; Laysan).—JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 228, fig. 93 (Honolulu).—VON BONDE, Fisher. Marine Biol. Survey South Africa, Rep. No. 3, 1922 (1924), p. 12 (off South Africa in 25 to 33 fathoms).

Priacanthus ulalaua JORDAN, EVERMANN and TANAKA, Proc. California Acad. Sci., ser. 4, vol. 16, No. 20, 1927, p. 663 (Honolulu).

Priacanthus meeki (not JENKINS) JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 231 (Honolulu example).—JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 232 (Tatoku Island; Misaki).

Priacanthus arenatus (not CUVIER) GILCHRIST and THOMPSON, Ann. South Afric. Mus., vol. 6, 1908–1911, p. 148 (off Port Shepstone; Durban Harbor); Ann. Durban Mus., vol. 1, pt. 4, May 21, 1917, p. 337 (part).

Depth 2⅖ to 3; head 2⅞ to 3⅕, width 2 to 2⅛. Snout 3¼ to 3⅘ in head from snout tip; eye 2¼ to 2⅗, greater than snout or interorbital; maxillary reaches ⅕ to ¼ in eye, expansion 1¾ to 2 in eye, length 1⅘ to 2 in head from snout tip; teeth small, pointed, in 2 or 3 irregular rows above, with outer row enlarged and lower teeth in irregular row; narrow band of small teeth on vomer and palatines, none on tongue; interorbital 3¾ to 4, moderately convex; preopercle edge finely denticulate, with small spine at angle. Gill rakers 8 + 24, lanceolate, ½ of eye; gill filaments 1⅕ in gill rakers.

Scales 112 to 119 counted along (above) lateral line to caudal base and 8 to 10 more on latter; tubes 77 to 80 in lateral line to caudal base and 7 or 8 more on latter; 14 or 15 scales above lateral line, 41 to 43 below, 60 to 66 predorsal; 15 to 17 rows on cheek. Suprascapula small, entire; upper edge of shoulder girdle with few small serrae. Scales with 30 to 32 small and rather irregular apical denticles, in about 3 or 4 series transversely; circuli fine.

D. X, 14, I, fifth spine 2¼ to 2⅓ in total head length, first ray 1½ to 1⅞; A. III, 15, I or 16, I, third spine 1⅞ to 2½, fourth ray 1⅗ to 1⅞; caudal 1⅛ to 1⅓, slightly emarginate behind to deeply crescentic with age and 2⅛ in rest of body; least depth of caudal peduncle 4 to 5; pectoral 1¾ to 1⅞; ventral 1 to 1¼.

Back brown, paler below. Iris neutral gray. Vertical fins and ventrals all with more or less neutral dusky on membranes, ventrals paler basally. Pectoral pale. In young caudal often pale.

Red Sea, Arabia, Zanzibar, Natal, Madagascar, Reunion, Bourbon, Mauritius, Seychelles, India, Ceylon, East Indies, Philippines, Formosa, Japan, Melanesia, Hawaii.

Known at all times chiefly by the dusky or blackish spot, often diffused, at the bases of the rays of base of the ventral fin and usually persistent. The vertical fins and the ventrals are always more or less dusky or blackish. A handsome and variable fish, the caudal fin becoming deeply lunate or crescentic with age.

6506. Balikias Bay, southern Luzon. July 17, 1908. Length 320 mm.

A505. Balukbaluk Island, south of Zamboanga. September 12, 1909. Length 290 mm. Uniform vermilion. Soft fins dusky terminally. No black spots on vertical fins.

4837. Jolo market. February 11, 1908. Length 274 mm.

9227. Opol, Mindanao. August 14, 1909. Length 246 mm.

A509. Pilas Island, south of Zamboanga. September 12, 1909. Length 243 mm.

7024. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 290 mm.
7096, 7098, 11364, 11368. Port San Pio Quinto. November 11, 1908. Length 213 to 355 mm.
9248, 11029 to 11031. Varadero Bay, Mindoro. July 23, 908. Length 209 to 223 mm.
A769. Mabul Island, Borneo. September 29, 1909. Length 363 mm.
A1203. Doworra Island. December 2, 1909. Length 287 mm.
A1163, 13031 to 13034, 19944. Gane Road, Gillolo Island. December 1, 1909. Length 150 to 225 mm.
A1297. Uki, Bouro Island. December 9, 1909. Length 318 mm.
11144 to 11148. Hakuko, Soo Wan Bay, Formosa. January 29, 1910. Length 178 to 198 mm.
A1594. Soo Wan, Formosa. January 29, 1910. Length 218 mm.
One example. Honolulu. 1891. Length 217 mm.
50643 U.S.N.M. Honolulu. Bureau of Fisheries. Length 211 mm. Type of *Priacanthus alalaua.*
52810 U.S.N.M. Hawaiian Islands. Bureau of Fisheries (04172). Length 393 mm. As *Priacanthus meeki.*
71205 U.S.N.M. Misaki, Japan. *Albatross* Collection 1906. Length 78 to 82 mm. 2 examples.
75431 U.S.N.M. Tokyo, Japan, D. S. Jordan and J. O. Snyder. Length 73 mm.
51379 to 51380 A.N.S.P. Honolulu. Bishop Museum. Length 126 to 242 mm.
53047 A.N.S.P. Tugela River, 60 fs. H. W. Bell Marley. Length 238 mm.
53131 A.N.S.P. Bombay. 1924. Prof. F. Hallberg. Length 212 mm.

Subgenus COOKEOLUS Fowler

Ventrals enlarged, conspicuous, long as or half longer than head.

PRIACANTHUS BOOPS (Schneider)

Anthias boops SCHNEIDER, Syst. Ichth. Bloch. 1801, p. 308. Atlantic Ocean near Saint Helena.

Perca boops (FORSTER) SCHNEIDER, Syst. Ichth. Bloch, 1801. p. 308 (name in synonymy).—LICHTENSTEIN, Descript. Animal. Forster, 1844, p. 411.

Priacanthus boops CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 103 (Saint Helena).—PETERS, Arch. Naturg., 1855, p. 238 (Mozambique).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 216 (Saint Helena).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 655 (Muscat, Arabia); Cat. Fish. Brit. Mus., vol. 1, 1895, p. 357 (Saint Helena, Cape of Good Hope, South America, Muscat, Japan, Tokyo, China Sea).—STEINDACHNER, Anz. Akad. Wiss. Wien, No. 11, 1896, p. 198 (Kobe, Hiogo, Nagasaki).—JORDAN and SNYDER, Annot. Zool. Japon., vol. 3, 1901, p. 83 (Yokohama and Nagasaki).—FRANZ, Abh. Bayer. Akad. Wiss. vol. 4, Suppl. Band 1, 1910, p. 40 (Yokohama, Aburatsubu, Misaki).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-phys. Klasse, vol. 26, 1913, p. 10 (Oman).—THOMPSON, Marine Biol. Surv. South Africa, Rep. No. 3, 1916, p. 127.—FOWLER, Occas. Pap. Bishop Mus., vol. 8, No. 7, 1923, p. 382 (Honolulu).—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 500 (South Africa).—FOWLER, Mem. Bishop Mus., vol. 10. 1928, p. 190, pl. 15, fig. C (Honolulu); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 591 (Nagasaki), p. 633 (Honolulu).

Polyprion japonicus (LANGSDORF) CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 79 (name in synonymy).

Priacanthus japonicus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 106, pl. 50. Japan.—Schlegel, Fauna Japonica, Poiss., pt. 1, 1842, p. 20 (Japan).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 217 (Cape Seas, Japan. China Sea).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 24.—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Nagasaki).—Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 239 (Japan).—Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 48, 1883, p. (40), pl. 1, fig. 1.—Elera, Cat. Fauna Filip., vol. I, 1895, p. 467 (Santa Cruz, Luzon, Cavite).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 92.—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 532 (Biugo, Misaki, Tokyo).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., 1920, p. 155, (Ito, Izu).—E. K. Jordan, Proc. U. S. Nat. Mus., vol. 66, 1925, p. 19 (Honolulu).—Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 232 (Tokyo, Yokohama, Kochi, Toyama, Miyasu).

Priacanthus bonariensis Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 105. Buenos Aires, Argentina.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 216 (South America).

Priacanthus macropus Valenciennes, Hist. Nat. Poiss., vol. 7, 1831, p. 461. No locality.—Quoy and Gaimard, Voy. Astrolabe, Zool., vol. 3, 1834, p. 669, pl. 7, fig. 2 (Saint Helena).

Priacanthus fax Valenciennes, Hist. Nat. Poiss., vol. 7, 1831, p. 473. Mauritius.—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 24.—Playfair, Proc. Zool. Soc. London, 1867, p. 850 (Seychelles).—Alcock, Journ. Asiat. Soc. Bengal, vol. 65, pt. 2, 1896, p. 311 (off Ceylon in 32 fathoms).

Priacanthus alticlarens Valenciennes, Compt. Rendu Acad. Sci. Paris, vol. 54, 1862, p. 1168. Bourbon.—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 24.—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 127, pl. 16, figs. *3a–b* (type; Réunion).

Priacanthus supraarmatus Hilgendorf, Sitz. Ber. Ges. Naturf. Freund. Berlin, 1879, p. 79. Japan.

Priacanthus schlegelii Hilgendorf, Sitz. Ber. Ges. Naturf. Freund. Berlin, 1879, p. 79. Japan.

Plectropoma ocellatum Tennison-Woods, Fishes New South Wales, 1882, pl. 4.

Priacanthus junonis De Vis, Proc. Linn. Soc. New South Wales, vol. 9, 1884, p. 392. Queensland.

Priacanthus velabundus McCulloch, Biol. Res. Endeavour, vol. 3, pt. 3, Apr. 21, 1915, p. 114, pl. 19. Off Burrewarra Point, near Bateman's Bay, New South Wales, in 60 fathoms; Australian Zoologist, vol. 1, pt. 7. 1919, p. 49, pl. 20, fig. 177*b*.

Depth 2¼ to 2⅓; head 2⅔ to 2¾, width 2 to 2⅛. Snout 3½ in head from snout tip; eye 2⅖ to 2½, greater than snout or interorbital; maxillary reaches ⅛ to ¼ in eye, expansion 1⅘ to 2 in eye, length 1⅘ to 1⅞ in head from snout tip; teeth fine, conic, in bands in jaws, on vomer and palatines, tongue toothless; interorbital 3¼ to 3⅗, very slightly convex; preopercle spine 5 to 5½ in eye. Gill rakers 7+17, lanceolate, 2⅛ in eye, gill filaments ⅘ of gill rakers.

Scales 80 or 81 in lateral line to caudal base and 5 or 6 more on latter; tubular scales 58 or 59 in lateral line to caudal base and 4 or 5 more on latter; 13 to 14 above lateral line, 30 to 32 below, 50 to

53 predorsal forward to snout tip, 12 to 15 rows across cheek to angle of preopercle ridge. Suprascapula with broad, serrated, triangular spine. Scales with 35 or 36 strong apical spines; circuli fine basally; broad triangular keel well developed.

D. X, 12, i or 13 i, last spine 1½ to 1¾ in total head length, second ray 1⅒ to 1¼; A. III, 12, i or 13, i, third spine 1⅗ to 2⅛, third ray 1⅓ to 1⅗; caudal 1⅓ to 1⅖, truncate; least depth of caudal peduncle 3½ to 3⅗; pectoral 1½ to 1⅘; ventral 2⅛ to 2⅖ in combined head and body to caudal base.

Uniform pale brown generally. Membranes of spinous dorsal pale dusky terminally, blackish over most their extent in small examples. Ventrals dusky, blackish terminally.

Arabia, Cape of Good Hope, Madagascar, Mauritius, Bourbon, Réunion, Ceylon, Philippines, China Sea, Japan, Queensland, New South Wales, Hawaii. Also in the tropical Atlantic.

The most handsome and striking species of the family, readily known by its elongated blackish ventrals.

38818 U.S.N.M. Tokyo, Japan. Department of Education of Japan. Length 310 mm.

71136 U.S.N.M. Tokyo. *Albatross* Collection, 1906. Length 295 mm.

75475 U.S.N.M. Bingo. D. S. Jordan and J. O. Snyder. Length 235 mm. As *Priacanthus japonicus*.

52898 A.N.S.P. Nagasaki. 1929. Henry W. Fowler. Length 290 mm.

Genus PSEUDOPRIACANTHUS Bleeker

Pseudopriacanthus Bleeker, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 3, 1869, p. 241. Type *Priacanthus niphonius* Cuvier, monotypic.

Body well compressed, deep, depth greater than half of length to caudal base. Eye very large. Mouth large, protractile, vertical, chin prominent. Maxillary exposed, without supplemental bone. Bands of villiform teeth in jaws, on vomer and palatines. Hind nostril very large, close before eye. Preopercle denticulated. Interorbital broad, flat. Gill membranes separate. Gill rakers long, 17 on lower branch of first arch. Pseudobranchiae very large. Branchiostegals 6. Scales large, firm, well denticulated, striated. Lateral line complete, tubes straight and exposed whole length of scale. Dorsal spines 10, rays 11 or 12, spinous fin longer than soft fin. Anal with 3 spines and 9 to 11 rays, soft fin like soft dorsal. Caudal rounded. Pectoral asymmetrical, rounded, rays 18 or 19 and upper longest. Ventral inserted little before pectoral base, large, close together, attached to belly by membrane and spine very strong.

Western Pacific and Indian Oceans, also western tropical Atlantic.

PSEUDOPRIACANTHUS NIPHONIUS (Cuvier)

Priacanthus niphonius Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 107. Japan.—Schlegel, Fauna Japon., Poiss., pts. 2–4, 1843, p. 21, pl. 7*a* (Japan).—Richardson, Ichth. China Japan, 1846, p. 238 (one of Bürger's specimens).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 217 (Japan).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 24.—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Yokohama).

Pseudopriacanthus niphonius Bleeker, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 3, 1869, p. 241 (Japan); Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 14 (Celebes); vol. 8, 1876–1877, pl. (72)354, fig. 5, pl. (76)352, fig. 3.—Boulenger, Cat. Fish. Brit. Mus., vol. 1, 1895, p. 358 (Japan; Manado).—Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 40 (Yokohama, Fukuura, Aburatsubu, Misaki, Yagoshima, Ogushi).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 534 (compiled); Mem. Carnegie Mus., vol. 6, No. 4, Sept., 1914, p. 259 (Misaki and Sagami Bay).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., Vertebr., 1920, p. 155 (Tokyo market).—Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 233 (Tokyo, Kochi, Misaki).

Priacanthus (Pseudopriacanthus) niphonius Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, 1883, p. 239 (Tokyo, Oshima).

Myripristis refulgens Valenciennes, Compt. Rend. Acad. Sci. Paris, vol. 54, 1862, p. 1169. Bourbon.

Priacanthus refulgens Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 129, pl. 5, fig. 5 (type; Madagascar).

Priacanthus meyeri Günther, Proc. Zool. Soc. London, 1871, p. 656. Manado, Celebes.—Sauvage, Bull. Soc. Philom. Paris, ser. 7, vol. 6, 1882, p. 168 (Réunion); Hist. Nat. Madagascar, Poiss., 1891, p. 131 (Réunion).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (Manado, Celebes).

Depth $1\frac{3}{4}$ to $1\frac{4}{5}$; head $2\frac{2}{5}$ to $3\frac{3}{5}$, width $1\frac{3}{5}$ to $1\frac{2}{3}$. Snout $3\frac{3}{4}$ to 4 in head from snout tip; eye 2 to $2\frac{1}{5}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{1}{3}$ to $\frac{3}{5}$ in eye, expansion $1\frac{7}{8}$ to 2 in eye, length $1\frac{2}{5}$ to $1\frac{1}{2}$ in head from snout tip; teeth fine, conic, in bands in jaws, on vomer and palatines, none on tongue, outer rows in jaws little enlarged, especially upper; interorbital $3\frac{1}{2}$ to $3\frac{3}{4}$, very slightly convex to nearly level; preopercle spine better developed in young or projects little beyond gill opening. Gill rakers 9+21, lanceolate, much longer than gill filaments or $2\frac{1}{8}$ in eye.

Scales 45 to 56 counted along lateral line to caudal base and 5 or 6 more on latter; tubular scales 34 to 36 in lateral line to caudal base and 1 to 4 more on latter; 11 or 12 rows of scales above lateral line, 23 to 25 below, 38 or 39 predorsal forward to snout tip, 10 or 11 rows transversely across cheek to preopercle angle. Bones of head all more or less finely spinescent. Scales with 1 to 5 basal radiating striae; rows of 19 or 20 strong apical denticles; broad, strong, external triangular keel; circuli very fine.

D. X, 12, i or 11, i, fourth spine $1\frac{1}{3}$ to $1\frac{2}{5}$ in total head length, fourth ray $1\frac{2}{5}$ to $1\frac{2}{3}$; A. III, 10, i or 11, i, third spine $1\frac{2}{3}$ to 2, second ray $1\frac{2}{5}$ to $1\frac{2}{3}$; caudal $1\frac{1}{4}$ to $1\frac{1}{2}$, convex behind; least depth of caudal peduncle $3\frac{1}{4}$ to $3\frac{1}{3}$; pectoral $1\frac{3}{5}$ to $1\frac{2}{3}$; ventral 1 to $1\frac{1}{10}$.

Uniformly pale brownish. Membranes of spinous dorsal dusky, blackish in young. Ventral pale basally, blackish terminally. Young little deeper brown, with 5 transverse whitish bands, much narrower than dark interspaces; first from front of spinous dorsal, second from middle of same fin, third from last spine and fourth from last dorsal rays, fifth on caudal peduncle at caudal base. In young soft vertical fins also finely though rather sparsely marked with small deep brown spots or dots. Ventral entirely dark in young; membranes of spinous dorsal whitish behind each spine, then dusky before each spine, darker terminally where indistinct and still darker dots.

Bourbon, Réunion, Madagascar, East Indies, Japan.

22536 U.S.N.M. Aua, Japan. Japanese Government. Length 174 mm.
57544 U.S.N.M. Japan. P. L. Jouy. Length 118 mm.
57582 U.S.N.M. Japan. P L. Jouy. Length 133 mm.
59686 U.S.N.M. Urado, Japan. H. M. Smith. Length 90 mm.

Family LUTJANIDAE

Body oblong, more or less elevated. Head large, crest on skull usually developed. Mouth moderate or large, usually terminal, low and horizontal. Premaxillaries moderately protractile. Maxillary long, usually without supplemental bone (except in Döderleiniinae and Glaucosomatinae), largely slipping below preorbital edge, which forms more or less distinct sheath. Teeth various, unequal, sharp, not incisorlike; vomer and palatines usually with villiform teeth, variably small or wanting; tongue often with teeth. Preopercle serrate or entire. Opercle usually without spine. Gills 4, slit behind fourth. Gill rakers moderate or long. Gill membranes separate, free from isthmus. Pseudobranchiae large. Air bladder present, usually simple. Intestine short. Pyloric coeca few. Vertebrae 24, of which 14 caudal. Scales adherent, moderate in size, more or less strongly ctenoid or cycloid. Cheeks scaled. Lateral line distinct, concurrent with back, not extending on caudal. Dorsal single, continuous or deeply notched, sometimes divided as two fins; spines 10 to 12, usually strong, depressible in groove, heteracanthous. Anal like soft dorsal, with 3 spines. Caudal emarginate to forked. Ventral thoracic, with spine and 5 rays, with more or less distinct scalelike appendage at base.

A large family of active, voracious, carnivorous shore fishes of warm seas. All are valued as food, especially those of large size.

Vegetichthys Tanaka[5] described as a new genus of Lutjanidae in Japanese only, I am unable to translate.

ANALYSIS OF GENERA

a^1. Maxillary broad, scaly, scarcely sheathed by preorbital, with distinct supplemental bone; gill rakers long and slender.

b^1. GLAUCOSOMATINAE. Teeth in bands, without distinct canines; supplemental maxillary narrow; preopercle coarsely toothed; scales moderate, entirely cover head and soft dorsal and anal bases; lateral line extends on caudal; dorsal continuous with graduated spines; caudal lunate; pectoral short------**Glaucosoma.**

b^2. DÖDERLEINIINAE. Teeth unequal, canines numerous, moderate; supplemental maxillary broad; scales large; soft dorsal and anal scaleless; dorsal deeply notched, spines 10; pectoral long, not falcate------**Döderleinia.**

a^2. Maxillary without supplemental bone.

c^1. Vomer and palatines with teeth.

d^1. LUTJANINAE. Interorbital convex, not flattened; jaws usually with canines; dorsal continuous.

e^1. Soft dorsal and anal more or less scaly, last ray not extended.

f^1. Gill rakers few, rather short------**Lutjanus.**

f^2. Gill rakers very numerous, fine, long------**Macolor.**

e^2. Soft dorsal and anal scaleless, last ray of each extended, filamentous.

g^1. Pectoral very short, shorter than ventral; dull olive------**Apsilus.**

g^2. Pectoral long as head or longer; red or red and golden. **Tropidinius.**

d^1. ETELINAE. Interorbital flat above, top of head naked; dorsal and anal naked; opercle spineless; caudal deeply and in adult unequally forked.

h^1. Dorsal fin continuous.

i^1. Pectoral short, not falcate------**Aprion.**

i^2. Pectoral long, falcate------**Pristipomoides.**

h^2. Dorsal fin deeply notched, though 2 fins not completely separated well contrasted------**Etelis.**

c^2. Palate toothless; jaws with very small teeth, disappearing with age; dorsal and anal scaleless, last rays produced; pectoral falcate, lower rays produced with age------**Aphareus.**

Genus GLAUCOSOMA Schlegel

Glaucosoma SCHLEGEL, Fauna Japonica, Poiss., pts. 2–4, 1843, p. 62. Atypic; pt. 15, 1850, p. 317. Type *Glaucosoma bürgeri* RICHARDSON, monotypic.

Breviperca CASTELNAU, Office. Rec. Centennial Exhib. Philadelphia (Rec. Fishes Australia), 1875, p. 6. Type *Breviperca lineata* CASTELNAU, monotypic.

Reganichthys OGILBY, Mem. Queensland Mus., vol. 3, 1915, p. 123. Type *Reganichthys magnificus* OGILBY, monotypic.

Body robust to deeply ovate, compressed. Head large. Mouth large, terminal, protractile, lower jaw protruding. Maxillary very wide, with narrow supplemental bone, scarcely slipping below preorbital. Teeth small, some canine-like, in narrow bands in jaws, on vomer and palatines, also on tongue. Preopercle with blunt teeth at angle or entire. Gill rakers long, slender. Scales moderate or small, adherent, ctenoid, smooth. Head well scaled, also maxillary and mandible. Soft vertical fins scaled basally. Lateral line nearly straight, extends on caudal. Dorsal moderate, with 8 graduated spines and 12 to 14 soft rays, which much higher than spines and some anteriorly may be produced. Anal with 3 short graduated spines and 12 soft rays which form fin-like soft dorsal. Caudal lunate, outer rays sometimes produced. Pectoral short, blunt. Ventrals little smaller, inserted below pectorals.

---

[5] Nihon San Gyorui (Journ. Zool. Studies, Imperial University, Tokyo), vol. 39, No. 13, 1918, p. 7. Type *Vegetichthys tumidus* TANAKA, monotypic.

ANALYSIS OF SPECIES

a^1. Scales 50 in lateral line; color largely uniform.
  b^1. Suprascapula dull, like rest of body........................... **hebraicum.**
  b^2. Suprascapula covered with black skin........................... **scapulare.**
a^2. Scales 60 in lateral line; 3 brown longitudinal bands above lateral line and 4 below........................... **fauvelii.**

GLAUCOSOMA HEBRAICUM Richardson

Glaucosoma ? hebraicum RICHARDSON, Voy. Erebus and Terror, Ichth., 1844–1846, p. 27, pl. 17. Houtman's Abrolhos, south western coast of Australia.

Glaucosoma bürgeri RICHARDSON, Voy. Erebus and Terror, Ichth., 1844–1846, p. 27. On *Glaucosoma* SCHLEGEL, Fauna Japonica, Poiss., pts. 2–4, 1843, p. 62, pl. 27, south west coast of Japan.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 211 (Houtman's Abrolhos).—BLEEKER, Nederland. Tijdschr. Dierk., vol. 4, 1874, p. (117) 150 (China).

Glaucosoma bürgeri CLARK, Handb. Zool. Van der Hoeven, vol. 2, 1858, p. 176 (on SCHLEGEL).—CASTELNAU, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. 364 (Port Jackson).—JORDAN and EVERMANN, Proc. U. S. Nat. Mus., vol. 25, 1903, p. 342, fig. 15 (Keerun, Formosa).—JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, 1910, No. 4, p. 185, fig. 13 (Takao, Formosa).—JORDAN and THOMPSON, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 440, fig. 1 (Keerun).

Depth $2\frac{2}{5}$; head $2\frac{1}{2}$. Snout $2\frac{7}{8}$ in head from snout tip; eye $3\frac{7}{8}$, $1\frac{1}{4}$ in snout, greater than interorbital; maxillary reaches nearly opposite hind eye edge, expansion $1\frac{1}{4}$ in eye, length $1\frac{3}{4}$ in head from snout tip; teeth villiform in jaws, upper biserial with outer front ones caninelike, lower uniserial except in front where irregular; narrow Λ-shaped band of fine teeth on vomer, none on palatines; interorbital 5 in head; coarse blunt teeth at preopercle angle. Gill rakers?

Scales 52 in lateral line (figure shows 47 tubes to caudal base and 1 more on latter); 12 scales above lateral line, 20 below, 8 rows across maxillary, 15 across cheek to preopercle ridge and 3 or 4 more on preopercle flange below. Suprascapula entire.

D. VIII, 11, I, last spine $3\frac{1}{3}$ in total head length, second ray 2; A. III, 9, I, third spine $4\frac{1}{5}$, second ray $2\frac{1}{10}$; caudal $1\frac{1}{3}$, little emarginate behind; least depth of caudal peduncle $2\frac{3}{5}$; pectoral $1\frac{3}{4}$; ventral $2\frac{1}{10}$.

Rusty silvery, head darker, somewhat purplish. Scale edges on side of body dark, bases brassy. Inside mouth and peritoneum black. Large brownish blotch on membrane below preorbital. Dorsal, anal and caudal dusky. Paired fins pale. Length 433 mm. (Jordan and Thompson.)

West Australia, New South Wales, China. Formosa, Japan.

GLAUCOSOMA SCAPULARE Macleay

Glaucosoma scapulare (Ramsay) Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 334. Port Jackson.—Kent, Great Barrier Reef, 1893, p. 281 (Sydney), p. 369 (Queensland).—Ogilby, Handb. of Sydney, 1898, p. 128.—Stead, Fishes of Australia, 1906, p. 96 (Queensland, New South Wales, West Australia).—McCulloch, Australian Zoologist, vol. 1, pt. 7, 1919, p. 54, pl. 23, fig. 198 (New South Wales).

Reganichthys magnificus Ogilby, Mem. Queensland Mus., vol. 3, 1915, p. 123, pl. 30. Thursday Island, Torres Straits; vol. 5, 1916, p. 182 (note).

Depth 2⅗; head 2⅗. Snout 3⅖ in head from snout tip; eye 4½, 1⅓ in snout, greater than interorbital; maxillary reaches ⅗ in eye (description says nearly opposite hind eye edge), expansion equals eye, length 2¼ in head from snout tip; teeth in jaws short, strong, pointed, and little curved, biserial, outer upper and inner lower larger; small teeth on vomer and palatines, villiform teeth on tongue; interorbital convex; preopercle serrated toward angle. Scales 50 in lateral line, 11 above, 20 below.

D. VIII, 11, eighth spine 3 in total head length, fourth ray 2¼; A. III. 9, I, third spine 4⅕, second ray $2\frac{1}{10}$; caudal 1⅓, little emarnate; least depth of caudal peduncle 2¾; pectoral 1⅘; ventral 2⅛.

Uniform silvery, each scale with black spot, caused by black skin showing through bases of scales. Length 508 mm. (Macleay.)

Queensland, New South Wales, West Australia.

GLAUCOSOMA FAUVELII Sauvage

Glaucosoma fauvelii Sauvage, Bull Soc. Philomath. Paris, ser. 7, vol. 5, 1881, p. 104. Swatow, China.

Depth 2¾ in total, body oval; head over 3, profile curved. Snout shorter than eye; eye 3 in head; maxillary reaches opposite hind eye edge; preopercle finely denticulate.

Scales 60 in lateral line, 10 above, 22 below. Suprascapula not evident. Head all scaly.

D. VIII, 11, rays not prolonged. A. III, 9, second spine shorter than third. Caudal truncate.

Yellowish gray with golden reflections. Above lateral line 3 brown longitudinal lines, uppermost follows profile of back. Four bands below lateral line. Fins uniform. Length 165 mm. (Sauvage.)

China.

Genus DÖDERLEINIA Steindachner and Döderlein

Döderleinia Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 237. Type *Döderleinia orientalis* Steindachner and Döderlein, monotypic.

Acanthocephalus (not Laporte 1833) (Döderlein) Steindacher and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 237. Type *Acanthocephalus orientalis* (Döderlein) Steindachner and Döderlein, monotypic. (Name in synonymy.)

Eteliscus Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 355. Type *Anthias berycoides* Hilgendorf, monotypic.

Corusculus Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 75. Type *Anthias berycoides* Hilgendorf, monotypic.

Body oblong, compressed. Mouth large, oblique, lower jaw projecting. Maxillary broad, with wide supplemental bone. Teeth strong, some canine-like; teeth on vomer and palatines, none on tongue. Preorbital very narrow, not sheathing maxillary. Preopercle finely serrate. Opercle ends in 2 spines. Scales large, firm. Head scaly, except snout. Both jaws scaly. Few basal scales on soft dorsal. Dorsal short, deeply notched, spines 9, rays 10. Anal with 3 small, graduated spines. Last dorsal and anal rays not prolonged. Caudal lunate. Pectoral long, not falcate, tip obtuse. Ventral below pectoral.

DÖDERLEINIA BERYCOIDES (Hilgendorf)

Anthias berycoides Hilgendorf, Sitz. Ber. Ges. Naturf. Freunde Berlin, 1879, p. 78. Japan.

Etelis berycoides Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 242, pl. 4, fig. 1.—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 57.—Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 152 (Kanaya; Aburatsubu).

Eteliscus berycoides Jordan and Snyder, Proc. U. S. Nat. Mus., vol 23, 1900, p. 355 (Tokyo); Annot. Zool. Japon., vol. 3, 1901, p. 77.

Corusculus berycoides Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 75 (copied).

Doderleinia berycoides Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 443 (off Tokyo).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., 1920, p. 152 (Kanaya, Kazusa).

Döderleinia orientalis Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 237. Kachiyam in der Tokio-Bai.

Acanthocephalus orientalis (Döderlein) Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 237 (name in synonymy).

Depth 3; head 2⅗. Snout 4⅛ in head from upper jaw tip; eye 3⅖, greater than snout, greater than interorbital; maxillary reaches ⅓ in eye, expansion 2⅓ in eye, length 2⅗ in head from snout tip; upper outer row of rather small teeth, besides inner villiform band;

row of little larger outer canines below, besides inner villiform band; single row of fine teeth on vomer and each palatine; interorbital nearly level; hind preopercle edge finely serrated. (Gill rakers 8+15, about half of eye, according to Jordan and W. F. Thompson.)

Scales 47 in lateral line to caudal base and 3 more on latter; 6 scales above lateral line, 12 below, 10 predorsal to occiput then many fine ones forward at least opposite front pupil edge; 11 rows on cheek, of which last 3 on preopercle flange. Suprascapula denticulate.

D. IX, 10, I, fourth spine 2⅘ in total head length, first ray 2⅘; A. III, 7, I, third spine 3½, second ray 2½; caudal 1⅗, little emarginate; least depth of caudal peduncle 3⅕; pectoral 1½; ventral $2\frac{1}{10}$.

Reddish. Spinous dorsal with dusky border, lower half of anal and hind half of ventral with blackish pigment. Hind part of mouth cleft also blackish. (Steindachner and Döderlein.)

Japan. Jordan and W. F. Thompson give 335 mm. for their largest example.

Genus LUTJANUS Bloch

Lutjanus Bloch, Naturg. Ausländ. Fische, vol. 4, pt. 7, 1790, p. 108. Type *Lutjanus lutjanus* Bloch, tautotypic.

Lutianus Bloch, Naturg. Ausländ. Fische, vol. 4, pt. 7, 1790, pl. 245. Type *Lutjanus lutjanus* Bloch.

Turdus (not Linnaeus 1758) Catesby, Nat. Hist. Carolina, ed. Edwards, vol. 2, 1771, p. 9. Type *Labrus griseus* Linnaeus, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1917, p. 30. Species nonbinomial.

Salpa Catesby, Nat. Hist. Carolina, ed. Edwards, vol. 2, 1771, p. 17. Type *Sparus synagris* Linnaeus, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1917, p. 30. Prior to *Salpa* Forskål 1775. Species nonbinomial.

Naqua Forskål, Descript. Animal., 1775, p. 17. Atypic. Type *Sciaena gibba* Forskål, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1917, p. 34. Inadmissible.

Bobar Forskål, Descript. Animal., 1775, p. 44. Atypic. Type *Sciaena bohar* Forskål, assumed through vernacular name. Inadmissible.

Pagrus (Plumier) Lacépède, Hist. Nat. Poiss., vol. 4, 1803, p. 293. Type *Labrus griseus* Linnaeus, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1917, p. 72. Inadmissible.

Diacopes Cuvier, Bull. Soc. Philom. Paris, 1814, p. 89. Type *Holocentrus bengalensis* Bloch.

Diacope Cuvier, Mem. Mus. Hist. Nat. Paris, vol. 1, 1815, p. 360. Type *Holocentrus bengalensis* Bloch, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1917, p. 94. Not Hübner 1816.

Mesoprion Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 441. Type *Lutjanus lutjanus* Bloch, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1817, p. 124.

Genyoroge Cantor, Journ. Asiat. Soc. Bengal (Cat. Malayan Fishes), vol. 18, pt. 2, 1849, p. 994. Type *Holocentrus bengalensis* Bloch, virtually as *Genyoroge* Cantor proposed to replace *Diacope* Cuvier.

Neomaenis Girard, Rep. U. S. Mexican Bound. Surv., Zool., vol. 10, 1859, p. 18. Type *Lobotes emarginatus* (Baird and Girard) Girard, monotypic.

Hypoplites Gill, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 236. Type *Mesoprion retrospinis* Cuvier, monotypic.

Evoplites Gill, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 236. Type *Mesoprion pomacanthus* Bleeker, monotypic.

Neomesoprion Castelnau, Philadelphia Cent. Exhib. Offic. Rec. (Res. Fishes Australia), 1875 (1876), p. 8. Type *Neomesoprion unicolor* Castelnau, monotypic.

Rabirubia Jordan and Fesler, Rep. U. S. Fish Comm., pt. 17, 1889 (1893), p. 438. Type *Mesoprion inermis* Peters, monotypic.

Raizero Jordan and Fesler, Rep. U. S. Fish Comm., pt. 17, 1889 (1893), p. 438. Type *Mesoprion aratus* Günther, monotypic.

Bennettia Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 524. Type *Anthias johnii* Bloch, orthotypic.

Parkia Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525. Type *Lutianus furvicaudatus* Fowler, orthotypic.

Rhomboplitoides Fowler, Proc. Acad. Nat. Sci. Philadelphia, June 4, 1918, p. 33. Type *Rhomboplitoides megalops* Fowler, orthotypic.

Body compressed, oblong, back usually elevated. Head long, pointed, well compressed. Mouth large. Maxillary usually slips entirely below preorbital. Jaws with bands of villiform teeth, outer larger row often present; 2 to 4 strong or caninelike teeth at front of upper jaw; vomer and palatines with villiform teeth and often 1 or more areas of teeth on tongue with age; pterygoids toothless. Nostrils usually close together, without tube. Preopercle with or without shallow to deep notch into which distinct tubercle or knob may fit; hind edge finely serrate. Gill rakers few, rather short. Vertebrae 24 of which 14 caudal. Scales about 40 to 90 in lateral series. Head naked or scaly above, with wide inclined band of scales at nape. Soft dorsal and anal scaly basally. Dorsal spines 10, rarely 12, continuous with rays which 11 to 16. Anal spines 3, rays 7 to 9. Last dorsal and anal rays not extended. Caudal truncate or bilobate. Pectoral elongate, pointed.

Mesoprion aurivittatus Kent[6] and *Mesoprion helenae* Kent[7] are unidentifiable names.

Lutjanus paraemulon Bleeker[8] is noticed:

Depth 3½ in length. D. XI, 13?

Gray blue, with 10 to 12 more or less interrupted red bands. Pectoral immaculate violet blue.

Another unidentifiable nominal species is *Lutjanus dubius* Bleeker[9]

Depth 4 in length. Bluish, with 4 longitudinal yellow bands; uppermost from neck to dorsal; second from above eye to dorsal; third from snout through eye to caudal; fourth from maxillary to caudal. Caudal with 5 longitudinal brown or blackish bands, of which median horizontal, others oblique.

---

[6] Great Barrier Reef, 1893, p. 370. Queensland.

[7] Idem, p. 370. Queensland.

[8] Nederland. Tijdschr. Dierk., vol. 4, 1874, p. 150. China.

[9] Idem, p. 152. China.

ANALYSIS OF SPECIES

a^1. Raizero. Scales above lateral line entirely in series parallel with its course, below in horizontal series; fins without filaments.

b^1. Black lateral blotch on lateral line.

c^1. Black lateral blotch below last dorsal spines and front of soft dorsal **johnii.**

c^2. Black lateral blotch below middle of soft dorsal-------------**fuscescens.**

b^2. No black lateral blotch, but side with four rather ill-defined longitudinal dark-brown bands, second from eye----------------------------**palmeri.**

a^2. Glabrilutjanus, new subgenus. Scales above and below lateral line in horizontal series; several soft dorsal rays with prolonged filaments. **nematophorus.**

a^3. Neomaenis. Scales above lateral line in oblique rows, at least for some part posteriorly, below horizontal series.

e^1. Predorsal scales not extending forward in interorbital space.

f^1. Front scales above lateral line parallel with its course, only posterior rows oblique; predorsal scales extend opposite hind eye edge; greenish, each scale usually with dark spot; cheek often with 1 or 2 blue horizontal lines below eye----**argentimaculatus.**

f^2. Scales above lateral line in oblique rows throughout, below in horizontal rows.

g^1. Body with transverse blackish bands; caudal with large rounded black blotch.

h^1. Eight transverse blackish longitudinal bands, but without longitudinal dark bands---------------------**semicinctus.**

h^2. Five dusky longitudinal bands, crossed by dark transverse bands --**decussatus.**

g^2. Body without dark transverse bands.

i^1. Body without dark longitudinal bands.

j^1. White or rosy blotch on back below spinous dorsal and another below soft dorsal; upper and lower caudal edges dark------------------------------------**bohar.**

j^2. No white blotch on back below each dorsal fin.

k^1. Head with numerous longitudinal blue lines; body scales with silver-gray dots; pearly blotch, bordered black on lateral line below front of soft dorsal. **rivulatus.**

k^2. No blue lines on head or pearly blotch on lateral line.

l^1. No black lateral blotch on body.

m^1. No golden longitudinal streaks; dorsal bordered blackish; caudal violaceous---------**vaigiensis.**

m^2. Body with longitudinal golden or violet stripes.

n^1. Dorsal uniform; caudal with large black transverse crescent --------------------**lunulatus.**

n^2. Dorsal bordered blackish; caudal violaceous. **flavipes.**

l^2. Black lateral blotch on body.

o^1. Small black blotch below front of soft dorsal; infraorbital broad--**monostigma.**

o^2. Large black blotch, often ocellated, below front of soft dorsal; infraorbital very narrow--------------------**fulviflamma.**

i^2. Body with 2 dark longitudinal bands, upper from eye to caudal, lower from maxillary to anal--------**lemniscatus.**

e^2. Predorsal scales extend forward over interorbital or to front of eye.

p^1. LUTJANUS. Preopercle without or only slight notch above angle and interopercle spine feeble or absent.

q^1. Deep brown or blackish median lateral band.

r^1. Two blackish lateral bands, sometimes lower absent; pearly blotch below middle of spinous dorsal base, another below soft dorsal----------**biguttatus.**

r^2. Single black lateral band; no pearly blotches on back----------------**vitta.**

q^2. No black lateral bands.

s^1. Pectoral with black basal spot.

t^1. Bluish, with golden longitudinal bands--------------**chrysotaenia.**

t^2. Uniform brown---------**carponotatus.**

s^2. No dark pectoral spot; body with longitudinal golden streaks.

u^1. Preorbital and infraorbital very narrow--------------**lineolatus.**

u^2. Preorbital and infraorbital wide, much wider than maxillary.

v^1. Fins pale-------------**lutjanus.**

v^2. Dorsal edge dusky; caudal dark. **lineatus.**

p^2. DIACOPE. Preopercle with distinct notch, often very deep and interopercle armed with strong spur.

w^1. No black lateral blotch.

x^1. Rosy, with golden longitudinal bands---**rufolineatus.**

x^2. Yellow or golden.

y^1. No dark spot in pectoral axil.

z^1. Nine obscure broken horizontal streaks on back and side. **caeruleovittatus.**

z^2. Six blue streaks, oblique, all begin behind head. **duodecim lineatus.**

z^3. Six blue horizontal bands, third rarely on postocular---**spilurus.**

z^4. Four blue horizontal bands. usually complete--------**kasmira.**

y^2. Pectoral with dark axillary spot; body yellowish red; dorsal edge white; dark anterior anal blotch-----**fulvus.**

*w*². Round black blotch size of eye below front of soft dorsal and above lateral line; small black spot at pectoral origin___**luzonius.**

*a*⁴. LOXOLUTJANUS, new subgenus. Scales above and below lateral line in oblique rows crossing its course.

*aa*¹. Soft dorsal longer than high.

*bb*¹. Preopercle entire; broad dark band from dorsal to eye and maxillary; dark saddle, bordered white, on caudal peduncle; caudal truncate or little emarginate____**erythropterus.**

*bb*². Preopercle deeply gashed; no dark band on head; young with caudal peduncle above and caudal blackish; caudal deeply emarginate, upper lobe greatly expanded with age_________________________________**gibbus.**

*aa*². Soft dorsal angular or pointed behind, higher than long; preopercle little notched.

*cc*¹. Body with longitudinal golden streaks; caudal peduncle with dark blotch, pale in front and behind________________________**malabaricus.**

*cc*². Three broad blackish transverse bands, first inclined from predorsal through eye and last bent posteriorly on caudal peduncle______**sebae.**

Subgenus RAIZERO Jordan and Fesler

Scales above lateral line entirely in series parallel with its course, below in horizontal series. Fins without filaments.

LUTJANUS JOHNII (Bloch)

Anthias johnii BLOCH, Naturg. Ausländ. Fische, vol. 6, 1792, p. 113, pl. 318. Suratta.—FORSTER, Fauna Indica, 1795, p. 16.—SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 303 (Tranquebar).

Lutjanus johnii LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, pp. 191, 235 (Tranquebar).—DAY, Fishes of India, pt. 1, 1875, p. 42, pl. 13, fig. 1.—SAUVAGE, Bull. Soc. Philom. Paris, ser. 7, vol. 5, 1885, p. 104 (Swatow, China).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 476.—CHAUDHURI, Mem. Indian Mus., vol. 5, No. 2, Apr. 1923, p. 718 (Rumbha Bay).—VINCIGUERRA, Ann. Mus. Civico Stor. Nat. Genova, series 3, vol. 10, 1926, p. 584 (Sarawak).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 277 (Santa Maria and Philippines); Journ. Bombay Nat. Hist. Soc., vol. 30, No. 1, 1928, p. 113 (Bombay); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 635 (Padang).—TIRANT, Service Océanogr. Pêches Indo Chine, 6 Note, 1929, p. 168 (Hué).

Lutianus johnii DAY, Fishes of India, pt. 1, 1875, p. 42, pl. 13, fig. 1 (type of *Mesoprion flavipinnis;* Madras).—KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 1, pt. 1, 1879, p. 341 (Cleveland Bay and Endeavour River).—FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).—JORDAN and SEALE, Proc. Davenport Acad. Sci., vol. 10, 1905, p. 10 (Hong Kong); Proc. U. S. Nat. Mus., vol. 29, 1906, p. 522 (probably Shanghai).—LLOYD, Rec. Indian Mus, vol. 1, 1907, p. 226 (Akyab).—GILCHRIST and THOMPSON, Ann. South Afric. Mus., vol. 6, 1908, p. 213 (Natal).—REGAN, Ann. Natal Gov. Mus., 1908, p. 244 (Durban Bay).—THOMPSON, Marine Biol. Rep. South Africa, vol. 3, 1916, p. 125.—GILCHRIST and THOMPSON, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 343 (references).

Lutjanus johni Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–77, pt. (60)338, fig. 8 (Sumatra, Nias, Pinang, Singapore, Bintang, Banka, Duizend Islands, Java, Madura, Borneo, Flores, Celebes, Amboina, Waigiu, Luzon).—Sauvage, Bull. Soc. Philom. Paris, ser. 7, vol. 5, 1881, p. 104 (Swatow).—Pellegrin, Bull. Soc. Zool. France, vol. 30, 1905, p. 85 (Baie d'Along, Tonkin).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 247 (Macassar).—Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 225 (Fort Dauphin, Madagascar).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 196 (Moen, Society Islands, Apiang).—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Lutianus johni Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 79 (Bacon).—Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 287 (Truck).—Fowler, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 661 (Natal).

Mesoprion johnii Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 443 (copied).—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 985 (Pinang, Malay Peninsula).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 200 (North West Australia, Pacific Ocean, Madras, Macassar, Cape Seas).—Day, Fishes of Malabar, 1865, p. 11; Proc. Zool. Soc. London, 1865, p. 8 (Cochin).—Kner, Reise Novara, Fische, 1865, p. 35 (Manila, Singapore).—Day, Proc. Zool. Soc. London, 1870, p. 680 (Andamans).—Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 15 (Tahiti).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 38 (Bowen).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Singapore).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Bowen).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 283 (Pasacao).—Kent, Great Barrier Reef, 1893, p. 370 (Queensland).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 460 (Luzon, Camarines Sur, Percacao).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 56.—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903(1904), p. 147 (Kuala Selangor).

Lethrinus johnii Castelnau, Proc. Zool. Acclimat. Soc. Victoria, vol. 2, 1873, p. 84 (Port Darwin).

Sparus tranquebaricus Shaw, General Zool., vol. 4, 1803, p. 471. Tranquebar.

Coius catus Buchanan-Hamilton, Fishes of Ganges, 1822, pp. 90, 369, pl. 38, fig. 30. Larger Ganges estuaries.

Lutjanus unimaculatus Quoy and Gaimard, Voy. Uranie, Zool., 1824, p. 304. Rawak; Waigiu.—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Mesoprion unimaculatus Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 441 (collection Commerson, Sonnerat, Quoy and Gaimard).—Quoy and Gaimard, Voy. Astrolabe, Zool., vol. 3, 1834, p. 665, pl. 5, fig. 3 (Port Dorey, New Guinea).—Richardson, Ichth. China Japan, 1846, p. 229 (China Seas).—Guichenot, Mém. Soc. Sci. Cherbourg, ser. 2, vol. 2, 1866, p. 145 (Madagascar).

Mesoprion flavipinnis Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 475. Pondicherry.

Mesoprion yapilli Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 483 (on *Yapilli* Russell, Fishes of Coromandel, vol. 1, 1803, p. 75, pl. 95, Vizagapatam).

Lutjanus yapilli Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 479.

Serranus pavoninus Valenciennes, Hist. Nat. Poiss., vol. 7, 1831, p. 443. Bombay.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 126 (compiled).

Lutianus hudsoni Evermann and Shaw, Proc. California Acad. Sci., ser. 4, vol. 16, No. 4, June 31, 1927, p. 116. Nanking.

Depth 2⅖ to 2⅘; head 2½ to 3⅔, width 2⅖ to 2¾. Snout 2⅘ to 3½ in head from snout tip; eye 3⅓ to 6⅓, little greater than snout in young to 2⅛ with age, little greater than interorbital in young to 1⅓ in interorbital with age; maxillary reaches ⅕ to ½ in eye in young or not quite to eye with age, expansion 1⅖ to 2½ in eye, length 2⅖ to 2⅔ in head from snout tip; band of villiform teeth in front below and outer row of enlarged conic teeth, only teeth above and front 4 canines; villiform teeth on vomer, palatines and tongue; interorbital 5 to 5½, little convex; hind preopercle edge minutely serrated, shallow emargination below, remaining lower edge with rather strong, well-separated denticles. Gill rakers 9+12, 1⅖ in eye, of which 7 above and 4 below rudimentary.

Scales 45 to 48 in lateral line to caudal base and 9 more on latter; 6 or 7 scales above lateral line, 11 to 13 below, 12 or 13 predorsal to occiput, 6 or 7 rows on cheek; scales above lateral line parallel with its course entirely, below in horizontal series. Scales with 29 to 47 basal radiating striae; apical denticles 100 to 105, with 10 to 23 transverse series of basal elements; circuli very fine.

D. X, 14, I, fourth spine 2⅖ to 2½ in total head length, tenth spine 3½ to 4¼, seventh ray 2⅕ to 2¾; A. III, 8, I, second spine 2¾ to 3⅓, third ray 2 to 2⅓; caudal 1⅓ to 1½, truncate; least depth of caudal peduncle 3⅕; pectoral 1¼ to 1⅓; ventral 1⅔ to 1¾.

Brown, sides and below whitish, with silvery sheen. Each scale with dark spot, forming longitudinal series above and parallel with lateral line; below in horizontal series. Large dark blotch, equal or larger than eye on lateral line opposite soft dorsal origin, often absent. Iris pale yellowish to brownish. Fins all pale brown.

Natal, Madagascar, India, Andamans, Malay Peninsula, Pinang, Singapore, East Indies, Philippines, Tonkin, China, Queensland, Micronesia, Polynesia. A very well marked species, easily known by the scales above the lateral line in rows parallel with its course, those below in horizontal rows. The coloration with much silvery white and variegated by dark spots on scales.

Day quotes "*Sparus malabaricus* Shaw" but in turning to the reference one finds "*Sparus tranquebaricus*."

Mesoprion flavipinnis Cuvier is noticed: D. X, 14. A. III, 9. Back gray, whitish below, everywhere with silvery tinge. Fins yellowish, also iris. Length 610 mm.

Mesoprion yapilli Cuvier is based on the *Yapilli* Russell, which is a fair representation of the present species. Cuvier also notes an example obtained by Dussumier:

Silvery, gilded, dull greenish tint on back and rose or coppery on head and belly. Along back and sides lines formed of dark brown spots, one at middle of each scale. Fins yellowish. Length 756 mm.

Serranus pavoninus Valenciennes is noticed: D. X, 13. A. III, 8. Reddish, with four first rays of soft dorsal with black ocellus, circled brilliant silvery. Caudal square cut, appears yellow, with small vertical black basal line. Other fins gray. Length 25 mm.

Bloch's figure of *Anthias johnii* shows the lateral line a little steep, the caudal round, the pectoral short and denticulations on the preopercle edge large. Young specimens are like the adults in general appearance, though have a greatly narrower infraorbital, more so than the young of equal size of *Lutjanus fulviflamma*.

Lutianus hudsoni Evermann and Shaw seems to be simply a variant without the black lateral spot and but 11 dorsal rays.

5845. Cotabato, Mindanao. May 20, 1908. Length 913 mm.
5260. Dagupan, Luzon. March 19, 1908. Length 170 mm.
17021. Galvaney Island, Ragay Gulf, Luzon. March 9, 1909. Length 84 mm.
9598. Hermana Mayor Island, Luzon. May 8, 1909. Length 238 mm.
6106. Iloilo market, Panay. June 1, 1908. Length 318 mm.
6095. Iloilo market. May 31, 1908. Length 331 mm. No black lateral blotch.
20423, 20425, 20426. Malampaya River, Palawan. December 26, 1908. Length 75 to 112 mm.
12150. Manila market. March 12, 1908. Length 148 mm.
6760, 6768. Manila market. April 21, 1909. Length 254 to 400 mm.
11957, 12151. Manila market. April 22, 1909. Length 189 to 230? mm.
6294. Manila market. June 12, 1908. Length 250 mm.
7628, 7629. Mouth of Malampaya River and vicinity. December 20, 1908. Length 270 to 376 mm.
12563. Near Palag Bay, Luzon. June 16, 1909. Length 113 mm.
6643. Off Daet. June 15, 1909. Length 223 mm.
7973. Pagapas Bay, Luzon. February 20, 1909. Length 308 mm.
21284. Panabutan Bay, Mindanao. February 6, 1908. Length 84 mm.
13847, 15925. Port Banalacan, Marinduque. February 23, 1909. Length 230 to 235 mm.
One example. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 58 mm.
8264. Ragay River, Ragay Gulf, Luzon. March 10, 1909. Length 248 mm.
19684, 19685. Santa Cruz Island, Marinduque. April 24, 1908. Length 75 to 82 mm.
8561 [D. 5442]. San Fernando Point, N. 39° E., 8.4 miles (16° 30′ 36″ N., 120° 11′ 06″ E.), Luzon. May 11, 1909. Length 517 mm.
8816, 8818, 20889. Santiago River, Pagapas Bay. February 20, 1909. Length 86 to 115 mms.
21796. Varadero Bay, Mindoro. July 23, 1909. Length 62 mm.
A1021. Buka Buka Island, Gulf of Tomini, Celebes. November 20, 1906. Length 106 mm.
6808. Kowloon market, China. September 18, 1909. Length 229 mm.
27582 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 298 mm. Pale olivaceous generally in arrack, darker above and each scale with slightly darker center so that longitudinal lines form. Large blackish blotch above lateral line just below last dorsal spine base and front dorsal rays. Lower body surface pale, inclining to silvery white. Dorsal spines with several indistinct brown cross markings. Outer portions of soft dorsal and anal grayish. Caudal brownish. Paired fins paler.

LUTJANUS FUSCESCENS (Valenciennes)

Mesoprion fuscescens Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 538. Fresh waters of Celebes.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 201 (types of *Mesoprion hoteen*).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Matang, Borneo).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (North Celebes).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 460 (Cebu).

Lutjanus fuscescens Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 48, pl. (43)321, fig. 3 (Celebes, Batjan, Ceram).

Mesoprion hoteen Richardson, Ichth. China Japan, 1846, p. 229. Canton, China.

Depth 2¾. Snout 2$\frac{9}{10}$ in head from snout tip; eye 5½, 2 in snout, greater than to subequal with interorbital; maxillary reaches ½ in eye, length 2⅓ in head from snout tip; teeth in bands in jaws, outer row enlarged and as small canines in front of each jaw; vomer and palatines with bands of fine teeth, tongue edentulous; interorbital convex; hind preopercle edge finely denticulate, scarcely emarginate above angle. Scales 55 to 57 counted along above lateral line, 50 along below lateral line (figure shows 61 tubes in lateral line to caudal base and 3 more on latter); 6 scales above lateral line, 16 below, 12 predorsal to occiput, 6 rows on cheek with broad naked preopercle flange. D. X, 13, third spine 3⅕ in total head length, sixth ray 2; A. III, 9, second spine 3, fourth ray 2⅗; caudal 1⅓, hind edge only very slightly emarginate; least depth of caudal peduncle 2⅞; pectoral 1⅗; ventral 1⅔.

Above olivaceous, below silvery. Iris yellowish or rosy, pupil edge golden. Scales of back and sides with olivaceous gray basal spot. Black blotch little larger than eye on lateral line below middle of soft dorsal base. Spinous dorsal base yellowish golden, terminally fin dusky brown. Soft dorsal medially, spinous anal membranes and caudal posteriorly, violaceous, fins otherwise dull olivaceous. Pectoral grayish basally. Front margin of ventral violaceous. Reaches 280 mm. (Bleeker.)

East Indies, Philippines, China. Bleeker says it frequents river mouths.

LUTJANUS PALMERI, new species

Depth 2⅓; head 2⅖, width 2¼. Snout 3¾ in head from snout tip; eye 4, 1¼ in snout, greater than interorbital; maxillary reaches ⅓ in eye, expansion 1⅞ in eye, length 2⅘ in head from snout tip; teeth fine, in narrow bands in jaws, with 4 anteriorly outside in each slightly larger; vomer and palatine each with narrow band of fine teeth; interorbital 5½, but slightly convex; preopercle edge finely denticulate, emargination above angle shallow. Gill rakers 6+11, of which 4 or 5 above and below rudiments, lanceolate, much longer than gill filaments or ½ of eye.

Scales 44 in lateral line (counted along and close above) to caudal base and 8 more on latter; tubular scales 41 in lateral line to caudal base and 4 more on latter; 6 scales above lateral line, all in courses parallel with lateral line, 14 rows below all in horizontal series; 9 predorsal scales to occiput, 7 rows on cheek. Suprascapula denticulated. Scales with 17 basal radiating striae; apical denticles 90, small, with 5 or 6 transverse series of basal elements; circuli very fine.

D. X, 13, fourth spine $2\frac{2}{5}$ in total head length, seventh ray $2\frac{1}{8}$; A. III, 8 I, second spine $2\frac{1}{2}$, second ray $2\frac{1}{5}$; caudal $1\frac{1}{4}$, emarginate; least depth of caudal peduncle $2\frac{4}{5}$; pectoral $1\frac{1}{8}$; ventral $1\frac{3}{5}$.

Brown generally, with 4 longitudinal ill defined darker bands; uppermost includes all of back, second extends from eye just above axial line to base of upper caudal lobe, third as line at first and then from pectoral axil to lower surface of caudal peduncle, fourth from maxillary expansion to lower pectoral base and then towards anal base. Areas on lower half of body between dark bands and all of under surface of body whitish. Iris light brown. Fins all pale brown.

Diagnosis.—Known by its large scales and coloration, the 4 dark longitudinal bands not like those of any other species.

Type.—Cat. No. 89995, U. S. N. M.

5238. Malabang, Mindanao. May 21, 1908. Length 128? mm.

(For the late William Palmer, of the U. S. National Museum, who collected fishes in Java with Owen Bryant.)

GLABRILUTJANUS, new subgenus[10]

Type.—*Mesoprion nematophorus* Bleeker.

Scales above and below lateral line in horizontal series. Fourth to seventh dorsal rays with prolonged filaments more than half entire body length. Seven to nine narrow blue longitudinal bands, upper two above eye, next two or three from eye.

Diagnosis.—Known among all the species of the genus by the prolonged soft dorsal filaments. The toothless palate and brilliant coloration, especially the narrow longitudinal blue bands, are other characters in combination.

LUTJANUS NEMATOPHORUS (Bleeker)

Mesoprion nematophorus BLEEKER, Act. Soc. Sci. Ind. Néerland. (Celebes), vol. 8, 1860, p. 56. Celebes.

Lutjanus nematophorus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (7)285, fig. 3; vol. 8, 1876–1877, p. 47 (Singapore; Celebes).

Lutianus nematophorus OGILBY, Mem. Queensland Mus., vol. 7, 1920. pt. 1, p. 20, pl. 1. (off Hervey Bay, Queensland).

Depth $2\frac{1}{2}$ to $2\frac{3}{4}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width $2\frac{2}{5}$ to $2\frac{3}{4}$. Snout $2\frac{2}{5}$ to $2\frac{2}{3}$ in head; eye $4\frac{1}{4}$ to 5, $1\frac{2}{3}$ to $2\frac{1}{5}$ in snout, 1 to $1\frac{1}{4}$ in interorbital; maxillary reaches ⅕ in eye in young to front eye edge with age, expansion 1⅓ to 1⅖ in eye, length 2¼ to 2⅓ in head; teeth in villiform band above, in front with pair of wide set canines, below teeth small, conic and uniserial, also 4 to 6 outer similar ones anteriorly; no teeth on palate; interorbital 4¼ to 4⅔, little convex; preopercle edge minutely serrulate in young, nearly entire with age. Gill rakers 5+13, of which 2 or 3 lower rudiments; lanceolate, 1⅔ in eye or equal gill filaments.

---

[10] *Glaber*, smooth; *Lutjanus;* with reference to the toothless palate.

Scales 49 to 52 in lateral line to caudal base and 3 to 5 more on latter; 9 above, 17 below, in horizontal series both above and below lateral line; 12 to 16 predorsal forward to occiput; 10 rows across cheek to preopercle ridge and preopercle flange naked. Scales with 14 or 15 basal radiating striae; 63 to 72 minute apical denticles, with 10 to 12 transverse series of basal elements; circuli very fine.

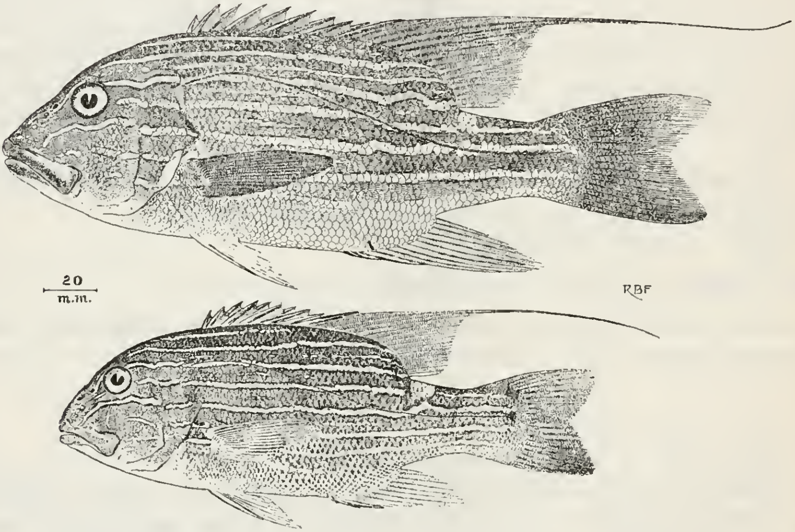

Figure 10.—Lutjanus nematophorus (Bleeker). Variation

D. X, 16, I, or 15, I, third spine 3¼ to 4 in head, fourth ray in young and with age fourth to seventh rays elongate and with one of branches extended as filaments more than half length of entire fish; A. III, 9, I, third spine 3⅛ to 3¼ in head, third ray 1¼ to 1⅖; caudal 1⅕ to 1¼, deeply emarginate; least depth of caudal peduncle 2⅗ to 2¾; pectoral 1¼ to 1⅓; ventral 1⅖ to 1½.

Pale brown, lighter to gray or whitish below. Body with 7 to 9 more or less waved, often variably broken, incomplete or interrupted longitudinal gray blue lines or bands, each narrowly margined, both above and below with dusky or dark brown. With age often other narrower similar parallel blue lines alternate with more conspicuous ones. Sometimes blue line crosses interorbital or uppermost body band may meet on predorsal. All specimens show distinct whitish saddle about size of pupil on caudal peduncle close behind base of last dorsal ray. Iris yellowish white. Fins pale brownish, lower ones whitish. Ventrals gray to rather dark gray terminally.

Celebes, Queensland. Bleeker had but two young examples 82 to 86 mm., one of which is rather indifferently figured. Ogilby's figure differs in that it shows the hind caudal edge blackish. Neither of these writers show the pearl white saddle on the caudal peduncle close behind the soft dorsal fin.

5718 to 5721. Cebu market. August 12, 1909. Length 144 to 198 mm.
6099. Cebu market. August 12, 1909. Length 133 mm.
8417. Cebu market. March 20, 1908. Length 258 mm.

Subgenus NEOMAENIS Girard

Scales above lateral line in oblique rows, at least for some part posteriorly, below in horizontal series. Predorsal scales not extending forward in interorbital.

LUTJANUS ARGENTIMACULATUS (Forskål)

Sciaena argentimaculata FORSKÅL, Descript. Animal., 1775, pp. xi, 47. Arabia.—BONNATERRE, Tabl. Ichth., 1788, p. 123 (Red Sea).—WALBAUM, Artedi Pisc., vol. 3, 1792, p. 313 (on FORSKÅL).

Diacope argentimaculata CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 432 (copied).—RÜPPELL, Atlas Reise Nördl. Africa, Fische, 1828, p. 71, pl. 19, fig. 1 (north Red Sea).—KOSSMANN and RÄUBER, Wiss. Ergebn. Reise Küstengeb. Roth. Meers, 1877, p. 8.

Mesoprion argentimaculatus GÜNTHER, Cat. Fish Brit. Mus., vol. 1, 1859, p. 192 (copied).—PLAYFAIR, Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).—KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 341 (Port Darwin and Cleveland Bay); Fische Roth. Meer., 1884, p. 14.—WEBER, Zool. Ergebn. Reise Nederland. Ost. Indien, vol. 3, 1894, p. 407 (Amparang River south of Balanguipa, Celebes).

Lutianus argentimaculatus DAY, Fishes of India, pt. 1, 1875, p. 51, pl. 11, fig. 5.—JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 262 (Apia).—JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 257 (Calayan, Rio Baco and Iloilo).—SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 499 (Okinawa, Riu Kiu).—MALPAS, Ceylon Administr. Report, 1921, pp. E5, E6, E7, E8.

Lutjanus argentimaculatus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 74, pl. (46)324, fig. 3, pl. (55)333, fig. 1 (Sumatra, Pinang, Singapore, Biliton, Java, Bali, Borneo, Celebes, Timor, Batjan, Ceram, Amboina, Waigiu, New Guinea).—DAY, Fishes of India, Suppl., 1888, p. 783 (note); Fauna Brit. India, Fishes, vol 1, 1889, p. 472.—STEINDACHNER, Abh. Senckenberg, Ges., vol. 25, 1900, p. 413 (Kau River, Halmaheira).—PELLEGRIN, Annuario Mus. Zool. R. Universit. Napoli, n. s., vol. 3, No. 27, July 11, 1912, p. 5 (Massaoua).—PEARSON, Ceylon Administr. Rep., 1912–1913, p. E 15 (Gulf of Manaar).—SOUTHWELL, Ceylon Administr. Report, 1912–13, pp. E42, E44, E51 (Ceylon pearl banks).—BEAUFORT, Bijd. Dierk.. Amsterdam, pt. 19, 1913, No. 9, p. 117 (Batu Merah, Ambon; Buli, Halmaheira in fresh water).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 252 (Bima, Sumbawa; Macassar; Saleyer; Dobo, Aru Islands).—PELLEGRIN, Bull. Soc. Zool. France, vol. 39, 1914, p. 225 (Nossi-Bé and Fort Dauphin, Madagascar).—PEARSON, Ceylon Administr. Report, 1915–18, pp. F9–F13, F15–F18.—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 202 (Apia and Society Islands); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong), p. 636 (Padang).—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Lutjanus (*Mesoprion*) *argentimaculatus* STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 128 (Tamarida Brook near estuary, Teiche Lebîne at Kor Garrich and Hafen Háulaf at Tamarida, Sokotra).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-phys. Klasse, vol. 26, 1913, p. 19 (Oman).

Sciaena argentata GMELIN, Syst. Nat. Linn., vol. 1, 1789, p. 1300 (on FORSKÅL).

Perca argentata SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 86 (on FORSKÅL).

Labrus argentatus LACÉPÈDE, Hist. Nat. Poiss., vol. 3, 1802, pp. 426, 467, pl. 18, fig. 1 (Arabia).

Alphestes gembra SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 236. Tranquebar.

Mesoprion gembra CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 485 (PERON collection).—CANTOR, Journ. Asiat. Soc. Bengal (Cat. Malayan Fishes), vol. 18, pt. 2, 1849, p. 997 (Pinang).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 45 (India, Sumatra, Amboyna, Borneo); Fishes of Zanzibar, 1866, p. 17 (Zanzibar).—PLAYFAIR, Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).—SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Pelew and Samoan Islands); No. 7, 1879, p. 38 (Samoa, Tonga, Pelew Islands).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Singapore).—PÖHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Pelew Islands).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (Manado, Celebes).—GORGOZA, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 283 (Ilocos; Samar).—ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 465 (Luzon, C. Hocos, Camarines, Cagayan, Samar, Borongan).—DUNCKER, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 148 (copied).

Lutjanus gembra BLEEKER, Nederland. Tijdschr. Dierk., vol. 4, 1874, p. (117) 150 (China).—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 87 (type).

Mesoprion rangus CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 482. Java. (On *Rangoo* RUSSELL, Fishes of Coromandel, vol. 1, 1803, p. 74, pl. 94, Vizagapatam).—CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 996 (Pinang, Singapore, Malay Peninsula).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 199 (Ceylon).—DAY, Fishes of Malabar, 1865, p. 10; Proc. Zool. Soc. London, 1865, p. 10 (Cochin, Malabar).—KNER, Reise Novara, Fische, 1865, p. 34 (Ceylon; Hong Kong).—DAY, Proc. Zool. Soc. London, 1870, p. 680 (Andamans).—MEYER, Anal. Soc. Españ Hist. Nat., Madrid, vol. 14, 1885, p. 11 (North Celebes).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).—DUNCKER, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 147 (compiled).

Lutjanus rangus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873-1876, pl. (21)299, fig. 3; vol. 8, 1875-1877, p. 65 (Pinang, Singapore, Java, Bali, Sumbawa).—TIRANT, Service Océanogr. Pêches Indo Chine, 6e Note, 1929, p. 168 (Hué).

Mesoprion tæniops VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 543. Fresh waters of Celebes.

Mesoprion yapilli (not VALENCIENNES) RICHARDSON, Ann. Mag. Nat. Hist., vol. 9, 1842, p. 26. Port Essington.

Mesoprion yapillii Day, Fishes of India, pt. 1, 1875, p. 45, pl. 13, fig. 6 (Madras).

Mesoprion immaculatus (not Valenciennes) Bleeker, Verh. Batav. Genootsch. (Percoid.), vol. 22, 1849, p. 45 (Batavia).

?*Mesoprion maus* Thiollière, Fauna Woodlark, 1857, p. 147. Woodlark Island.

Mesoprion griseoides Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 2(23). Réunion.

Lutjanus griseoides Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 92, pl. 9, fig. 3, *a-b* (type; Madagascar).

Mesoprion rubellus (not Valenciennes) Day, Fishes of Malabar, 1865, p. 11, pl. 2; Proc. Zool. Soc. London, 1865, p. 11 (Cochin, Malabar).

Mesoprion sillaoo (not Valenciennes) Day, Fishes of Malabar, 1865, p. 12 pl. 11, fig. 1*a*; Proc. Zool. Soc. London, 1865, p. 10 (Cochin, Malabar); 1870, p. 680 (Andamans).

Lutianus sillaeoo Day, Fishes of India, pt. 1, 1875, p. 39, pl. 12, fig. 2.

Lutjanus sillaoo Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 473.—Pearson, Ceylon Administr. Rep., 1912–1913, pt. 4, p. E14 (Gulf of Manaar).—Tirant, Service Océanogr. Pêches Indo Chine, 6^e Note, 1929, p. 168 (Quinhon).

Mesoprion garretti Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 15, pl. 13, fig. B. Kingsmill Islands.

Lutianus roseus (not *Diacope roseus* Valenciennes, 1830) Day, Fishes of India, pt. 1, 1875, pt. 11, fig. 1. Madras.—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).

Lutjanus roseus Day, Fauna Brit. India, Fishes, vol. 2, 1889, p. 472.—Pearson, Ceylon Administrat. Report, 1912–13, p. E14.—Tirant, Service Océanogr, Pêches Indo Chine, 6^e Note, 1929, p. 168 (Cochin China).

Lutianus jahngarah Day, Fishes of India, pt. 1, 1875, p. 40. Seas of India.

Lutjanus jahngarah Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 474.

Lutjanus lineatus (not Quoy and Gaimard) Streets, Bull. U. S. Nat. Mus., No. 7, 1877, p. 90 (Christmas Island).

Lutianus lineatus Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 264 (Apia, Samoa).—Smith and Seale, Proc. Biol. Soc. Washington, vol. 19, 1906, p. 77 (Mindanao).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 81 (San Fabian).

Mesoprion obscurus Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 331. Endeavour River.—Kent, Great Barrier Reef, 1893, p. 370 (Queensland).

Mesoprion roseigaster Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 331. Rockingham Bay, Queensland (said to be from fresh water).—Kent, Great Barrier Reef, 1893, p. 370 (Queensland).

Mesoprion griseus (not Linnaeus) Schmeltz, Cat. Mus. Godeffroy, No. 8, 1881, p. 5 (Ponapé); No. 9, 1884, p. 26 (Ponapé).

Lutianus rivulatus (not Cuvier) Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (one Zamboanga specimen).

Lutianus salmonoides Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, 1908, p. 146. Natal; East London; Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 345 (copied).

Depth 2⅖ to 2⅘; head 2⅖ to 2⅔, width 2 to 2⅘. Snout 2½ to 3⅕ in head; eye 3⅞ to 6, 1¼ to 2½ in snout, greater than interorbital in young to 1⅕ with age; maxillary reaches ⅕ to ⅓ in eye in young to front eye edge with age, expansion 1¼ to 2 in eye, length 2⅖ to 2⅗ in head; lips moderate; bands of villiform teeth in jaws, with outer row enlarged slightly, front pair above little canine-like, also 4 each side below; villiform teeth on vomer, palatines and tongue; interorbital 4⅗ to 6, slightly convex; hind preopercle edge finely denticulate, with emargination below, but no subopercular knob. Gill rakers 6+11 or 12, equal gill filaments, 1¾ in eye.

Scales 40 to 47 in lateral line to caudal base and 6 to 8 more on latter; 7 to 8 scales above lateral line, 14 or 15 below, 12 to 15 predorsal to occiput, 8 or 9 rows of scales on cheek. Scales with 19 to 25 basal radiating striae; apical denticles 73 to 118, with 8 to 20 transverse series of basal elements; circuli very fine.

D. X, 13, I or 14, I, fourth spine 2⅘ to 3⅗ in head, seventh ray 2¼ to 2⅖; A. III, 8, I or 9, I, third spine 3⅛ to 4, third ray 1⅞ to 2⅖; caudal 1⅕ to 1⅖, slightly emarginate behind, truncate as expanded; least depth of caudal peduncle 2⅘ to 2⅞; pectoral 1⅕ to 1⅓; ventral 1⅔ to 1⅞.

Back brown, below paler. Each scale on back with slightly darker basal spot than general body color though above lateral line rows of scales anteriorly parallel with its course, posteriorly little inclined upward; below lateral line each row of scales horizontal with pale brassy or yellowish stripes, made up of spot of this color on each scale. Vertical fins deep brown like back, also ventrals, though pectorals usually paler.

Red Sea, Arabia, Sokotra, Zanzibar, South Africa, Natal, Madagascar, India, Ceylon, Andamans, Pinang, Singapore, East Indies, Philippines, Cochin China, Riu Kiu, North Australia, Queensland, Melanesia, Micronesia Polynesia. My examples show no traces of the one or two horizontal blue lines on the cheek below the eye as in Bleeker's figure of the adult. In small ones the blue line is often distinct. Very small or young examples often show six to eight ill-defined vertical whitish lines or narrow bands resembling Day's figure.

Mesoprion taeniops Valenciennes is noticed: Without a lateral spot; reddish brown, with four or five silvery lines below; blue horizontal streak across suborbitals; unpaired and ventral fins blackish, anal more colored; pectoral grayish; length 178 mm.

The nominal *Lutianus roseus* Day is evidently a synonym. Specimens like this form have the scales above the lateral line largely parallel with its course, often in varying degree. In many the scales are parallel until below the last dorsal spines or first dorsal rays. The scale rows may also vary in their inclination.

Mesoprion obscurus Macleay is noticed as follows: Head and depth equal, ⅓ of total. Upper head profile straight. Eye equals snout.

Maxillary scarcely reaches eye center. Preopercle edge finely serrated behind and only slightly notched. D. X, 12. A. III, 8. Scales 48 in lateral line. Dingy black, with numerous narrow indistinct cross bands of lighter hue. Fins all more or less blackish except pectoral. Tail truncate.

Mesoprion roseigaster Macleay, is another likely synonym: Head and depth equal, ⅓ total. Head profile straight, descends to snout angle 45°. Eye nearly 5 in head, 2 in snout, 1¼ in interorbital. Lips thick, almost conceal maxillary, which reaches eye center. Several lower canines, no very conspicuous ones above. Preopercle very slightly notched, little jagged about angle. Scales large, smaller on caudal, 40 in lateral series. D. X, 13, fourth spine longest; mid soft dorsal rays longest. A. III, 9, second spine very strong, not long as third; first rays longest, giving truncate appearance behind. Caudal slightly emarginate. Pectoral almost reaches vent, beyond ends of ventrals. Head and body above bluish silvery, with vertical pearly mark on each scale and below very pink. Length 459 mm.

Mesoprion rangus Cuvier, as understood by Bleeker, differs only in color, his figure showing yellow lines on the body.

8092, 19843, 19844, 20211, 20212. Alimango Bay, Burias Island. March 5, 1909. Length 150 to 270 mm.

7211, 7212. Aparri market. November 19, 1908. Length 348 to 438 mm.

20492. Bagaong River, Sablayan Bay, Mindoro. December 13, 1908. Length 66 mm.

22038 to 22040. Basud River, Luzon. June 15, 1909. Length 37 to 57 mm.

5852. Below Mindanao River mouth, Mindanao. May 20, 1908. Length 494 mm.

8489. Brackish river at Port Dupon, Leyte. March 17, 1909. Length 183 mm.

19112, 19113. Buena Vista, Guimaras Island, Iloilo Strait. January 14, 1909. Length 68 to 143 mm.

8268, 8269, 8285. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 293 to 433 mm.

5271. Cavite. March 23, 1908. Length 421 mm.

5037. Cotabato, Mindanao. Length 152 mm.

5843. Cotabato market. May 20, 1908. Length 570 mm.

11518, 11519, 23735. Dumaca River, Luzon. February 25, 1909. Length 85 to 132 mm.

7488. Endeavor Strait near anchorage, Palawan. December 22, 1908. Length 258 mm.

10660. Fresh water Basud River, Luzon. June 15, 1909. Length 234 mm.

17024 to 17026. Galvaney Island, Ragay Gulf, Luzon. March 9, 1909. Length 116 to 125 mm.

4953 Iloilo market. March 29, 1908. Length 177 mm.

6107, 11758. Iloilo market. June 2, 1908. Length 172 to 288 mm.

5842, 5843. Iwahig River, Palawan. April 4, 1909. Length 150 to 249 mm.

11836, 11837. Joni River, Tayabas. February 25, 1909. Length 131 to 147 mm.

4911, 4912, 20249 to 20251. Malinao River, Mantaquin Bay, Palawan. April 2, 1909. Length 104 to 162 mm.

19352. Mahonog, Camiguin Island. August 3, 1909. Length 57 mm.

22462, 22463. Malugao River, Paluan Bay, Mindoro. December 11, 1908. Length 62 to 67 mm.

6739. Manila market. April 21, 1909. Length 388 mm. Dusky olive, with reddish tinge. A few scales behind shoulder and on under side with black blotches on outer borders. No blue stripe on cheek. Said to be caught in salt water. Rather numerous in market, this specimen about minimum size, maximum to 915 mm. Tag. Bambângin.

7627. Mouth of Malampaya River and vicinity. December 26, 1908. Length 310 mm.

9288 to 9290. Murcielagos Bay, Mindanao. August 9, 1909. Length 305 to 329 mm.

9635. Nato River, Luzon. June 18, 1909. Length 182 mm.

5335, 5337, 11967. Nonucan River, Camp Overton, Mindanao. August 6, 1909. Length 135 to 189 mm.

7972. Pagapas Bay, Luzon. February 20, 1909. Length 413 mm.

20345. Pancol, Malampaya, Palawan. December 25, 1908. Length 102 mm.

7178. Pangauran River, Port Caltom, Busuanga Island. December 16, 1908. Length 192 mm.

6731. Passi, Iloilo, Panay Island. January 14, 1909. Length 370 mm.

13 examples. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 62 to 110 mm.

11434 [1087], 11436. Pucot River, Mariveles, Luzon. January 29, 1909. Length 93 to 108 mm. General color lead gray with narrow bars of paler about 1 to ½ scales in width, about 7 of these and an equal number of obscure narrower lines between; undulating blue lines under eye, across most of preorbital and backward to edge of preopercle; shorter line beneath opposite upper edge of maxillary; fins near body color; spinous dorsal membranes dusky cherry red on terminal half, basal portion with obscure blotches of same; soft fin with few gray spots; edges of caudal lobes slightly cherry; spinous membranes of anal and tips of front ray membranes dusky, with cherry shade; ventrals blackish at tips, produced first ray white, second, third and fourth membranes bright cherry red; pectoral very pale cherry tinge, rays slightly dusky.

8503. Quinianca River. April 4, 1909. Length 270 mm.

5384, 5385, 8264. Ragay River, Ragay Gulf, Luzon. March 10, 1909. Length 116 to 245 mm.

7721. River of Nakoda Bay, Palawan. December 30, 1908. Length 436 mm.

19449. River at Pasacao, Luzon. March 9, 1909. Length 85 mm.

8903. Rosa Island, Lagonoy, Luzon. June 17, 1909. Length 285 mm.

7258 to 7261, 7263. Stream at Maagnas, Lagonoy Gulf, Luzon. June 17, 1909. Length 167 to 179 mm.

20653. Stream near village at Chase Head, Endeavor Strait, Palawan. December 22, 1908. Length 107 mm.

8037. Tayabas River, Tayabas Island. February 25, 1909. Length 320 mm.

18944. Tilig, Lubang. July 15, 1908. Length 180 mm.

21723. Varadero Bay, Mindoro. July 24, 1908. Length 162 mm.

7117. West coast Palaui Island. November 18, 1908. Length 108 mm.

11703, 21597. Yaua River, Legaspi. June 7, 1909. Length 178 to 207 mm.

6092, 6093. Zamboanga market. May 29, 1908. Length 265 to 267 mm.

A687. Si Amil Island, Borneo. September 25, 1909. Length 281 mm. Entire head bright vermilion, anterior body below lateral line, breast and belly, bright orange wash; dorsal dark, similar to back, but with strong orange shades; margin of soft dorsal whitish; caudal with vermilion shades terminally, entire fin dark; lower fins dark orange; pectoral reddish orange, with dusky blotch in upper base, showing somewhat externally.

A780, 19907. Tawao River, Tawao, Borneo. September 30, 1909. Length 187 to 560 mm.

5059. Sandakan, Borneo. February 29, 1908. Length 230 mm.

A1293. Uki, Bouro. December 9, 1909. Length 348 mm.

13496. River at Uki, Bouro. December 9, 1909. Length 156 mm.

9989. Maitara Island. November 26, 1909. Length 413 mm.

A1574, A1575. Soo Wan, Formosa. January 29, 1910. Length 363 to 460 mm. Bases of scales brownish red in smaller example, becoming nearly sepia on back of larger example. Center of scales with very dark brown lenticular bar. Outer portion of scale, except extreme margin silvery, with brown wash. Extreme margin red brown at base. Lower surfaces become more solid color and lighter red. Slaty undulous stripe under eye, none on cheek. Membranes of soft vertical fins dark terminally, especially caudal.

19242 U.S.N.M. Christmas Island. Dr. T. H. Streets. Length 295 mm. As *Lutjanus lineatus.*

52421 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 259 to 194 mm. 2 examples.

52257 U.S.N.M. Apia. Bureau of Fisheries. Length 36 to 42 mm. As *Lutjanus lineatus.* 2 examples.

55992 U.S.N.M. Rio Grande, Mindanao. Bureau of Fisheries (4232). As *Lutjanus lineatus.*

56046 U.S.N.M. San Fabian. Bureau of Fisheries (4125). Length 188 mm. As *Lutjanus lineatus.*

One example (with 57918 U.S.N.M.). Zamboanga. Dr. E. A. Mearns. Length 84 mm. As *Lutianus rivulatus.*

72025 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection 1906. Length 210 mm.

72232 U.S.N.M. Aparri, Philippines. R. C. McGregor. Length 92 mm.

72248 U.S.N.M. Mindoro. R. C. McGregor. Length 153 mm.

72253 U.S.N.M. Iloilo, Panay. Bureau of Fisheries. Length 124 mm.

27594 and 27595 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 260 to 290 mm. When fresh in arrack dusky olivaceous above, rosy below. Lower side of head washed rosy. On back each scale with dark center. Iris dark golden. Fins dark grayish or dusky black. Anal blackish terminally. Caudal mostly blackish. Pectoral pale or brownish, axil also pale. Ventral blackish on outer portion. As *Lutianus roseus.*

LUTJANUS SEMICINCTUS Quoy and Gaimard

Lutjanus semicinctus Quoy and Gaimard, Voy. Uranie, Zool., 1824, p. 303. Rawak; Waigiu.—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 63, pl. (63)341, fig 3 (Batjan, Obi Major, Amboina, Goram, Waigiu, Rawak, New Guinea).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 198 (Shortland Island; New Guinea; Society Islands).

Mesoprion semicinctus Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 485 (Waigiu).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 209 (compiled).—Schmeltz, Cat. Mus. Godeffroy, No. 1, 1864, p. 7 (South Sea).—Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 15, pl. 17 (Kingsmills).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (South Seas).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (Ternate).

Mesoprion sexfasciatus Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 255. Normanby River in fresh water, New Guinea.

Depth $2\frac{2}{3}$ to $2\frac{3}{4}$; head $2\frac{2}{5}$ to $2\frac{1}{2}$, width $2\frac{2}{5}$ to $2\frac{1}{2}$. Snout $2\frac{1}{2}$ to $2\frac{4}{5}$ in head; eye $4\frac{3}{5}$ to 5, $1\frac{3}{4}$ to $1\frac{7}{8}$ in snout, little greater than interorbital in young, subequal with age; maxillary reaches eye in young to ⅕ in eye with age, expansion 1⅗ to 1⅔ in eye, length 2⅓ to 2⅖ in head; teeth villiform, in bands in jaws, with outer row little enlarged and pair of canines in front of each jaw; band of villiform teeth on vomer and on each palatine; interorbital 5 to 5½, slightly convex; hind preopercle edge minutely serrated. Gill rakers 7+12, of which 5 or 6 above and below rudimentary, lanceolate, little larger than gill filaments or 1¾ in eye.

Scales 55 to 62 in lateral line to caudal base and 7 to 9 more on latter; tubular scales 46 or 47 in lateral line to caudal base and 5 or 6 more on latter; 7 or 8 scales above lateral line, 16 to 18 below, 15 to 18 predorsal, 8 rows on cheek. Suprascapula denticulate. Scales with 9 or 10 basal radiating striae; apical denticles 70 to 81, with 9 or 10 transverse series of basal elements; circuli very fine.

D. X, 13, i, fourth spine 2½ to 3 in head, first ray 3 to 3½; A. III, 8, i, second spine 3 to 3⅗, first ray 2⅗ to 2⅔; caudal 1⅓ to 1½, little emarginate behind; least depth of caudal peduncle 3 to 3⅛; pectoral 1⅕ to 1¼; ventral 1⅘ to 2.

Back brown, lower sides and under surface whitish. Seven deep brown vertical bands on back, gradually narrowing to middle of flanks where fading out. Large blackish blotch 1½ eye diameters at caudal base and on adjacent caudal peduncle. Iris brownish. Fins all brownish, lower ones whitish.

East Indies, Melanesia, Polynesia.

A1194. Doworra Island, Dutch East Indies. December 2, 1909. Length 262 mm. Shows trace of horizontal line under lateral line broken into spots posteriorly, otherwise normal.

A1228. Gomomo Island. December 3, 1909. Length 277 mm.

A1181, 13271, 2096. Gane Road, Gillolo Island. December 1, 1909. Length 158 to 262 mm. Bars reddish brown; ground color olive gray; preorbitals slightly spotted with orange; lower fins scarcely reddish; dorsal body color, tips pale orange and hyaline; soft dorsal and caudal hyaline olive; in larger specimen orange of Bleeker's plate appears; back clear light olive; blotch at tail black, without horizontal bars below.

30559 U.S.N.M. New Guinea. Australian Museum. Length 229 mm.

30560 U.S.N.M. New Guinea. Australian Museum. Length 233 mm.

LUTJANUS DECUSSATUS (Cuvier)

Mesoprion decussatus (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 487. Java.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 210 (Philippines, India, Amboina).—Kner, Reise Novara, Fische, 1865, p. 34. (Java):—Day, Proc. Zool. Soc. London, 1870, p. 680 (Andamans).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (North Celebes; Macassar; Cebu).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 283 (Mindanao; Pasacao).

Lutianus decussatus Day, Fishes of India, pt. 1, 1875, p. 47, pl. 14 fig. 4 (Andamans).—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).—Jordan and Seale, Proc. U. S. Nat. Mus., vol. 28, 1905,

p. 781 (Negros); Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 21 (Manila).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 79 (Bacon).—Fowler, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).

Lutjanus decussatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 72, pl. (60)338, fig. 4 (Sumatra, Nias, Biliton, Java, Duizend Islands, Bali, Celebes, Flores, Timor, Ceram, Amboina, Aru, Philippines).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 481.—Pearson, Ceylon Administr. Rep., 1912–1913, p. E15 (Gulf of Manaar).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 251 (Manado; Saleyer; Pepela Bay, Rotti).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 31 (Cebu).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 277 (Calapan); 1929, p. 635 (Padang).

Mesoprion therapon Day, Proc. Soc. Zool. Soc. London, 1869, p. 514. Andaman Islands.

Depth 2⅗ to 2⅞; head 2⅖ to 2½, width 2⅓ to 2½. Snout 2¾ to 3 in head; eye 4½ to 4⅘, 1⅗ to 1¾ in snout, subequal with interorbital; maxillary reaches ¼ in eye, expansion 1¾ to 1⅘ in eye, length 2⅖ to 2½ in head; band of villiform teeth in each jaw, outer row strong, sharp, enlarged, conic teeth; 2 wide set large, upper canines, none in front of mandible though each ramus with 2 to 5 enlarged lateral teeth; bands of villiform teeth on vomer, palatines and tongue, on first in wide angular band; interorbital 4¾ to 5½, hardly elevated, flattened; preopercle edge rough, not serrated, with rather wide emargination. Gill rakers 6+10, compressed, lanceolate, little less than gill filaments, which ½ of eye.

Scales 45 to 47 in lateral line to caudal base and 4 or 5 more on latter; 7 or 8 scales above lateral line, 15 to 17 below, 12 predorsal, 6 to 8 rows on cheek. Suprascapula entire. Scales with 16 to 18 basal radiating striae; apical denticles 88 to 90, with 4 or 5 transverse series of basal elements; circuli fine.

D. X, 13, i, third spine 2⅗ to 3 in head, third ray 3⅓ to 3⅖; A. III, 8, i, third spine 3⅕ to 3¾, second ray 2¾ to 3; caudal 1⅓ to 1⅖, emarginate; least depth of caudal peduncle 3 to 3⅓; pectoral 1¼ to 1⅓; ventral 1¾ to 2.

Brown, with brassy paler sides and lower surfaces. Five longitudinal dark bands, parallel, 2 uppermost wide as paler interspaces, others all narrower than pale interspaces; connecting 3 or 4 uppermost dark bands from edge of back 6 transverse dark bands, though these often variable or as well separated dark spots. Rounded dusky blotch, at least little larger than eye, at caudal base and medially, good part also on adjoining caudal peduncle. Head and vertical fins all more or less darker brown than general body color. Iris yellowish brown. Paired fins paler.

India, Ceylon, Andamans, East Indies, Philippines. A very strongly marked species and readily distinguished by its dark vertical and horizontal bands, together with the large dark blotch at the caudal base. The upper pair of canines extend over the lower lips as the jaws are closed.

5051, 7222, 7581, 15168. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 177 to 240 mm.

13506, 18269. Alimango Bay, Burias Island. March 5, 1909. Length 157 to 210 mm.

7732. Baganga Bay, Mindanao. May 13, 1908. Length 245 mm.

8646. Between Paron and Jesus Points, Luzon. June 21, 1909. Length 305 mm.

15874. Bolalo Bay, Palawan. December 2, 1908. Length 203 mm.

6308. Bugsuk Island, Balabac. January 5, 1909. Length 212 mm.

18769. Busin Harbor, Burias Island. March 7, 1909. Length 200 mm.

5628, 8373. Busin Harbor. April 22, 1908. Length 151 to 212 mm.

18998. Cagayan, Sulu. June 8, 1909. Length 185 mm.

7146. Casogoran, Malhon Island. July 27, 1909. Length 254 mm.

16334. Chase Head, Endeavor Strait, Palawan. December 22, 1908. Length 205 mm.

12836. Cebu market. April 6, 1908. Length 160 mm.

9251. Endeavor Strait, Palawan. December 22, 1908. Length 220 mm.

4620 to 4623. Grande Island Reef, Subig Bay. January 8, 1908. Length 197 to 205 mm.

9204, 9205. Hermana Mayor Island. Luzon. May 8, 1909. Length 222 to 225 mm.

7639, 7750. Jolo market. February 12, 1908. Length 218 to 235 mm.

5778. Lianga Bay, Mindanao. May 12, 1908. Length 260 mm.

4675. Limbones Cove, Luzon. January 14, 1908. Length 206 mm.

18412. Limbones Cove. January 17, 1908. Length 168 mm.

5976. Little Santa Cruz Island. May 26, 1908. Length 233 mm.

6055, 6056. Little Santa Cruz Island. May 28, 1908. Length 240 mm.

5409, 5410. Mactan Cove, Mactan Island. April 6, 1908. Length 242 to 287 mm.

12023. Malcochin Harbor, Linapacan Island. December 19, 1908. Length 215 mm.

6190, 7652. Mansalay, Mindoro. June 4, 1908. Length 218 to 286 mm.

5443. Mantacao Island, Bohol. April 8, 1908. Length 238 mm.

4731. Maricaban Island, Luzon. January 20, 1908. Length 253 mm.

5560. Masbate Reef, Masbate. April 20, 1908. Length 225 mm.

18616. Mompog Island. March 3, 1909. Length 202 mm.

4679, 13994. Nasugbu Bay, Luzon. January 16, 1908. Length 108 to 148 mm.

15655. Pagapas Bay, Luzon. February 20, 1909. Length 205 mm.

9392. Paluan Bay, Mindoro. December 11, 1908. Length 223 mm.

13136. Polloc, Mindanao. May 22, 1908. Length 203 mm.

10774, 22636. Port Banalacan, Marinduque. February 23, 1909. Length 220 to 224 mm.

12541 to 12543. Port Binanga, Luzon. January 9, 1908. Length 103 to 180 mm.

6829. Port Galera, Mindoro. June 9, 1908. Length 222 mm.

16613, 18686. Port Jamelo, Luzon. July 13, 1908. Length 156 to 165 mm.

11034. Port Maricaban, Luzon. July 21, 1908. Length 204 mm.

13372. Port Matalvi, Luzon. November 23, 1908. Length 192 mm.

8987, 13281. Rapurapu Island, Luzon. June 22, 1909. Length 195 to 249 mm.

11267. Refugio Island, Pasacao. March 9, 1909. Length 208 mm.

6295. Romblon Harbor. March 25, 1908. Length 180 mm.

12839, 12841. Sablayan, Mindoro. December 12, 1908. Length 213 to 228 mm.

20943. San Miguel Harbor, Ticao Island. April 21, 1908. Length 120 mm.

6556. San Roque, Leyte. July 29, 1909. Length 283 mm.

20970. Santa Cruz Island, Marinduque. April 24. 1908. Length 180 mm.

12620, 21663. Santiago River, Pagapas Bay, Luzon. February 20, 1909. Length 123 to 162 mm.

8315. Subig Bay, Subig. January 7, 1908. Length 276 mm.
15196. Taganak Island. January 7, 1909. Length 233 mm.
5836. Tataidaga Point, Pujada Bay, Mindanao. May 15, 1908. Length 216 mm.
7345. Tara Island. December 14, 1908. Length 230 mm.
5130. Usada Island, Jolo. March 5, 1908. Length 278 mm.
6932, 6933. West coast Sabtan Island. November 8, 1908. Length 280 to 307 mm.
17714, 9246, 9247. Varadero Bay, Mindoro. July 23, 1908. Length 165 to 188 mm.
7792. Danawan and Si Amil Islands, Borneo. September 27, 1909. Length 261 mm.
A1430. Kapoposang, Macassar Strait. December 28, 1909. Length 271 mm.
A1294. Uki, Bouro. December 9, 1909. Length 264 mm.
A1168. Gane Road, Gillolo Island. December 1, 1909. Length 227 mm.
A1537. Doc Can Island, Sulu Sea. January 7, 1910. Length 283 mm.
52012 U.S.N.M. Negros, Philippines. Dr. B. Dean. Length 70 mm.
56180 U.S.N.M. Bacon. Bureau of Fisheries (3954). Length 145 mm.
75890 U.S.N.M. Borneo. H. C. Raven. Length 220 mm.
75891 U.S.N.M. Borneo. H. C. Raven. Length 195 mm.
84187 U.S.N.M. Philippines. Dr. F. Baker. Length 116 mm.
27589 to 27591 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 98 to 279 mm. When fresh in arrack olivaceous above, marked with 7 longitudinal broad olivaceous bands on side, darker on back, paler on side and pale or indistinct on lower side. One of bands directly from eye and connected with dorsal base by 6 or 7 vertical bars of similar width and color. Oblong pale areas between vertical bars, together with lower surface of body, washed rosy, latter bright on lower side and more or less silvery. Lower longitudinal band more or less rosy olivaceous, especially on lower side of head. Latter not spotted, though tinged with rosy. Dorsal gray brown, spinous fin edge broadly darker and rayed fin edge narrowly whitish, though medianly darker in front than general tint of spinous fin. Basal portion of fin tinged with dark dull olivaceous, similar to greater part of caudal. Anal gray, base like that of dorsal. Hind part of caudal peduncle medianly and adjoining caudal base, over which it also extends, with large black blotch. Caudal edge narrowly whitish. Paired fins mostly orange, also bases inside. Peritoneum silvery.

LUTJANUS BOHAR (Forskål)

Sciaena bohar FORSKAL, Descript. Animal., 1775, pp. XI, 46. Arabia.

Lutianus bohar SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 325 (Red Sea).—DAY, Fishes of India, pt. 1, 1875, p. 44, pl. 13, fig. 4.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 485 (Thornton Island).—JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 262 (Pago Pago).—REGAN, Ann. Durban Mus., vol. 1, 1908, p. 168 (Durban).—BAMBER, Journ. Linn. Soc. London, vol. 31, Zool. 1915, p. 480 (Sudanese Red Sea).—GILCHRIST and THOMPSON, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 341 (references).—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct., 1927, p. 659 (Natal, Mozambique).

Lutjanus bohar BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 64, pl. (70) 348, fig. 4 (Sumatra, Batu, Celebes, Timor, Batjan, Amboina, Banda, New Guinea).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 477.—PEARSON, Ceylon Administr. Rep., 1912–1913, p. E15 (Gulf of

Manaar).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 253 (Salomakie Island).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 198 (Palmyra, Marcus, Shortland Islands, type of *Lutianus nukuhivae*, Upolu, Apiang); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Padang; Thornton, Marcus and Shortland Islands).

Lutjanus (*Mesoprion*) *bohar* Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Oman).

Diacope bohar Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 433 (Ehrenberg collection).—Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 73 (Red Sea); Neue Wirbelth., Fische, 1835, p. 103 (Red Sea).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 699 (Koseir, Red Sea).

Mesoprion bohar Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 190 (Madagascar).—Playfair, Fishes of Zanzibar, 1866, p. 17 (Zanzibar).—Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 13 (Society Islands, Paumotus).—Schmeltz, Cat. Mus. Godeffroy, No. 8, 1881, p. 5 (Upolu).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Upolu).—Klunzinger, Fische Roth. Meer., 1884, p. 14.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (North Celebes).—Boulenger, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 283 (Manila Bay; Mindanao).—Elera, Cat. Fauna Fillip., vol. 1, 1895, p. 460 (Luzon, Manila Bay, Cavite, Santa Cruz, Mindanao, Zamboanga).

Sparus lepisurus Lacépède, Hist. Nat. Poiss., vol. 3, 1802, pl. 15, fig. 2; vol. 4, 1802, pp. 45, 141. Great Equinoxial Ocean [Indo Pacific].

Lutianus lepisurus Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).

Diacope quadriguttata Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 427. North coast Mauritius; Massauah; Seychelles; East Indies.—Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 73 (Red Sea).—Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 533 (Red Sea).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.

Mesoprion flaviroseus De Vis, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 446. New Britain.

Lutianus nukuhivae Seale, Occas. Pap. Bishop Mus., vol. 6, No. 1, 1906, p. 40, fig. 5 (No. 2164). Nukuhiva, Marquesas Islands.

Depth $2\frac{1}{3}$ to $2\frac{7}{8}$; head $2\frac{1}{2}$ to $2\frac{2}{3}$, width $1\frac{7}{8}$ to $2\frac{3}{5}$. Snout $2\frac{1}{2}$ to $3\frac{3}{5}$ in head; eye $3\frac{3}{4}$ to $6\frac{1}{3}$, $1\frac{1}{8}$ to $2\frac{2}{5}$ in snout, slightly greater than interorbital in young to $1\frac{4}{5}$ to 2 in interorbital with age; maxillary reaches $\frac{1}{6}$ to $\frac{1}{2}$ in eye, expansion $\frac{1}{2}$ to $\frac{3}{4}$ in eye, length $2\frac{1}{4}$ to $2\frac{4}{5}$ in head; band of villiform teeth in each jaw, outer row enlarged, conic; 2 anterior canines in front of each jaw and often canines at middle of each mandibular ramus; fine teeth on vomer, palatines and tongue; interorbital $3\frac{1}{3}$ to 5, broadly convex; preorbital width equals eye; preopercle edge very minutely serrated, below with slight incision, lower rounded portion with small and well separated denticles but no suborbital knob. Gill rakers 8+16, 6 above and 2 below rudimentary, length half of eye.

Scales 49 or 50 in lateral line to caudal base and 4 more on latter, 9 to 11 above lateral line, 16 to 18 below, 16 predorsal, 8 rows on cheek. Scales above lateral line in oblique rows to dorsal bases, below in horizontal rows. Scales with 12 to 14 basal radiating striae; apical denticles 77 to 112, with 2 to 17 transverse series of basal elements; circuli very fine.

D. X, 14, I, fifth spine 2⅗ to 3 in head, fifth ray 2⅞ to 3⅖; A. III, 8, I, second spine 3 to 4, second ray 2⅘ to 3; caudal 1⅓ to 1½, emarginate; least depth of caudal peduncle 3⅕ to 3⅖; pectoral 1⅕ to 1⅓; ventral 1 to 2.

Olivaceous brown above, bright rosy below. Side above lateral line with oblique dusky olive stripes extending up to dorsal bases, become somewhat horizontal over caudal peduncle. Below lateral line similar colored paler longitudinal lines fading out on abdomen. Two dull whitish spots on back above lateral line, first below hind spinous dorsal and other below last dorsal ray bases. Dorsals dusky, become blackish along edge of spinous fin and submarginal part of rayed fin, edge of which is narrowly white. Anal blackish, deep marginally on spinous portion and continued on rayed portion, except a rather narrow white edge in front. Remaining portion of rayed anal becomes paler porteriorly so last rays brown. Scales on basal portion of anal dull orange. Caudal brown, with pale dusky edges and above and below rather darker or dusky brown. Pectoral with basal portions of lower median rays dull orange, upper rays dull olivaceous; inside pectoral base dusky brown. Ventral with white rays, membranes except at base of fin, where dull rosy, otherwise black, becoming deeper terminally. Inside ventral base rosy.

Red Sea, Arabia, Zanzibar, Mozambique, Natal, Mauritius, Réunion, Madagascar, India, Ceylon, East Indies, Philippines, Melanesia, Polynesia. A deep body with the two white spots on each side of the back above the lateral line, reaching a large size in comparison with the slender *Lutjanus biguttatus*. Garrett's figure as given by Günther shows the white spots quite large, or much larger than in any example I have met with. Günther gives 915 mm. for the length. Young often with only posterior white spot each side on back and sometimes the anterior may be variably large. Some examples may show a white spot on the upper edge of the caudal peduncle. With age or in large examples in alcohol the white spots are absent.

Possibly *Diacopus superbus* Castelnau[11] may have been intended for this species, the imperfect description condensed as follows:

Depth 2¾ without caudal; head 2½. Body broad, upper profile strongly convex. Eye 4½ in head. Two large upper front canines and 6 or 7 lower. Preopercle notch very distinct, receives slight knob; below several arched spines directed forward. Opercle ends in point. Body scales large. D. X (rays not given), fourth spine largest. A. III, 8, first spine short, second very large, arched, thick, third very little longer than second and rather arched; second to fourth rays longest. P. 17. Ventral far from reaching anal. Back brown, each scale center obscure. Below pink. Dorsal, anal and caudal scarlet, paired fins pink. Length 506 mm.

---

[11] Proc. Linn. Soc. New South Wales, vol. 2, 1878, p. 228. Moreton Bay, Brisbane.

Castelnau compares it with *Diacopus tiea* Lesson (pl. 23), but contends it is different.

13712, 16443 [1220], 17764. Alimango Bay, Burias Island. March 5, 1909. Length 169 to 210 mm. Broadly spindle shaped spot on each scale in elliptical region under seventh to ninth dorsal spines, having appearance of an elliptical spot on white blotch. Similar white blotch below base of second dorsal. In fading similar white broadly spindle shaped spots appear on scales all over body, causing original 2 white blotches to become less pronounced. Back blackish. Lower side olive. Belly dirty white.

6504, 17904. Balikias Bay, Lubang. July 17, 1908. Length 143 to 238 mm.

8618. Biri Channel, Balicuatro Islands. June 1, 1909. Length 627 mm.

16119. Bolalo Bay, Palawan. December 21, 1908. Length 168 mm.

7832, 9057, 9058 [1042], 12206. Bugsuk Island, Balabac. January 5, 1909. Length 158 to 283 mm.

5601. Busin Harbor, Burias Islands. April 22, 1908. Length 233 mm.

13330. Caxisigan Island, off Balabac. January 2, 1909. Length 218 mm.

7594. Endeavor Strait, Palawan. December 23, 1908. Length 242 mm.

7595, 7596, 11623, 11624. Endeavor Strait. December 24, 1908. Length 221 to 322 mm.

8236, 14632. Galvaney Island, Ragay Gulf, Luzon. March 9, 1909. Length 222 to 329 mm.

6105. Iloilo market. June 1, 1908. Length 295 mm.

9025. Langao Point, Luzon. June 24, 1909. Length 254 mm.

8676. Leung Point, Batog Island. Length 343 mm.

4671. Limbones Cove, Luzon. January 14, 1908. Length 238 mm.

6053, 6054, 8730. Little Santa Cruz Island. May 28, 1908. Length 172 to 258 mm.

897. Luzon Point, Manila Bay, Luzon. January 31, 1909. Length 617 mm.

9003. Mactan Cove, Mactan Island. April 6, 1908. Length 171 mm.

5446. Maculabo Island. June 14, 1909. Length 255 mm.

15017, 21614. Makesi Island, Palawan. April 5, 1909. Length 152 to 162 mm.

20027. Malapascua Island. March 16, 1909. Length 189 mm.

6177, 16782. Mansalay, Mindoro. June 4, 1908. Length 185 to 284 mm.

18548. Observatory Inlet, Palawan Passage. December 19, 1908. Length 148 mm.

7997, 13649, 22637. Port Banalacan, Marinduque. February 23, 1909. Length 207 to 341 mm. Has same colors as examples of half or 2/3 size; white blotch under axil of dorsal shows distinctly; anterior blotch is not apparent.

6832. Port Galera, Mindoro. June 9, 1908. Length 210 mm.

6346. Port Jamelo. July 13, 1908. Length 240 mm.

8532, 8533, 17614, 17615. Port Langcan, Dumaran Island, Palawan. April 8, 1909. Length 143 to 379 mm. Side of head with orange wash; back with purplish shades on young; lower portions somewhat washed with reddish; white spots show distinctly in both specimens; front spot in the larger quite small.

6573. Port Maricaban, Luzon. July 21, 1908. Length 260 mm.

7006, 7019. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 443 to 515 mm.

7061 to 7063, 18175. Port San Pio Quinto. November 11, 1908. Length 12 to 633 mm.

7885. Pucot River, Mariveles, Luzon. January 29, 1909. Length 458 mm.

A610. Singaan Island, between Jolo and Tawi Tawi. September 21, 1909. Length 420 mm.

213. Taganak Island. January 7, 1909. Length 180 mm.

7364. Tara Island. December 15, 1908. Length 241 mm.

4947, 19829 [265]. Tataan Island, Tawi Tawi Group. February 2, 1908. Length 210 to 238 mm.

14307. Teomabal Island. September 18, 1909. Length 128 mm.

18954. Tilig, Lubang. September 14, 1908. Length 208 mm.

21725. Tulayan Island, Jolo. September 15, 1909. Length 150 mm.

43, 18912. Tulnalutan Island, east of Zamboanga. September 9, 1909. Length 91 to 167 mm.

10856. Tutu Bay, first anchorage, Jolo. September 19, 1909. Length 120 mm.

20877. Usada Island. March 3, 1908. Length 94 mm. [377.]

A764. Mabul Island, Borneo. September 29, 1909. Length 627 mm.

A1226, A1227, 13292, 13293. Gomomo Island, Pitt Passage. December 3, 1909. Length 198 to 510 mm.

A1536. Doc Can Island, Sulu Sea. January 7, 1910. Length 280 mm.

25218 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 376 mm. Color in arrack dark brown, paler on sides and below whitish. Above lateral line each row of scales with median pale spot and borders dark, all inclined up to dorsal bases; below lateral line in horizontal series. On back above lateral line and below middle of spinous dorsal and again below bases of last dorsal rays white spot, each about size of pupil. Iris yellowish brown. Dorsals dusky, edge of soft fin above narrowly whitish. Anal with spinous fin and front of soft fin submarginally dusky, last rays paler and lower front edge narrowly whitish. Caudal rather deep brown, upper and lower edges darker, paler below. Ventral largely pale or whitish, though membranes of second and third rays neutral dusky, especially terminally.

LUTJANUS RIVULATUS (Cuvier)

Diacope rivulata Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 414, pl. 38. Coromandel, Pondicherry, Java, Red Sea, Malabar.—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 2, 1870, p. 694 (Koseir, Red Sea).

Diacope rivulina Swainson, Nat. Hist. Animals, Fishes, vol. 2, 1839, p. 211 (on Cuvier pl. 38).

Genyoroge rivulata Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 182 (China, Amboina, Red Sea).—Day, Fishes of Malabar, 1865, p. 7.—Playfair, Fishes of Zanzibar, 1866, p. 16 (Aden, Zanzibar); Proc. Zool. Soc. London, 1867, p. 848 (Seychelles).—Meyer, Anal. Soc. Españ Hist. Nat., Madrid, vol. 14, 1885, p. 10 (Manado, Celebes).—Boulenger, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 282 (Pasig River, Philippines).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 465 (Luzon, Manila, Rio Pasig).

Lutianus rivulatus Day, Fishes of India, pt. 1, 1875, p. 37, pl. 11, fig. 4.—Johnston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Tuticorin; Pamban).—Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 76 (Yokohama).—Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 262 (Apia).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 455 (Riu

Kiu; Padang; Pago Pago).—SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 499 (Okinawa).—MALPAS, Ceylon Administr. Report, 1921, pp. E5–E8.—DERANIYAGALA, Ceylon Administr. Report, 1922, p. F18.—BARNARD, Ann. South Afric. Mus., vol. 22, pt. 2, October 1927, p. 655 (Natal).

Lutjanus rivulatus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 73, pl. (69)347, fig. 3 (Sumatra, Java, Bawean, Bali, Celebes, Timor, Batjan, Buru, Amboina, Waigiu).—STEINDACHNER and DÖDERLEIN, Denkschr. Akad. Wiss. Wien, Math.-nat. Kl., vol. 47, pt. 1, p. 236 (Japan).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 471.—JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, 1910, p. 184 (Takao, Formosa).—PEARSON, Ceylon Administr. Rep., 1911–1913, pt. 4, p. E14 (Gulf of Manaar); 1914, pt. 4, p. E5.—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 117 (Macassar).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 251 (Manado; Kawa, West Ceram).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).—PEARSON, Ceylon Administr. Report, 1915–1918, pp. F9–F12, F15–F18.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 228 (Natal).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 71, 1927, p. 6 (Poeloe Toekus Island, Sumatra).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 202 (Society Islands; Apiang, Gilbert Islands); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Padang).—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

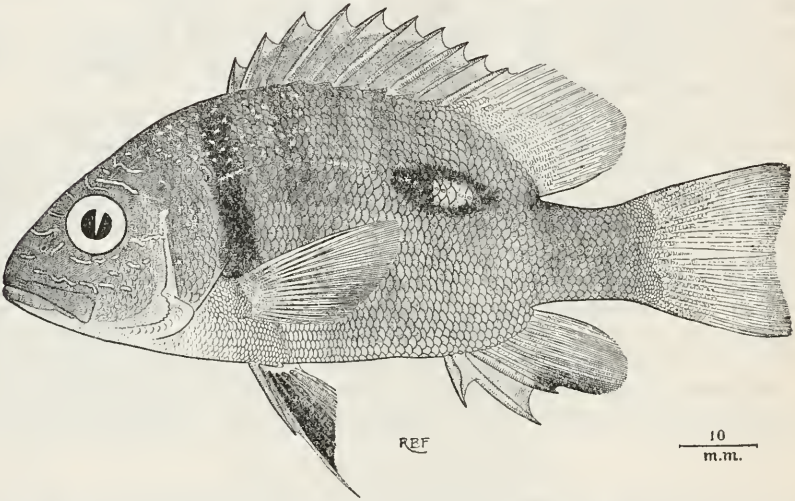

FIGURE 11.—LUTJANUS RIVULATUS (CUVIER.) YOUNG

Mesoprion rivulatus KLUZINGER, Fische Roth. Meer., 1884., p. 12 (Koseir, Red Sea).

'*Diacope caeruleo-punctata* CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 424 (on *Kalee maee* RUSSELL, Fishes of Coromandel, vol. 1, 1803, p. 75, pl. 96, Vizagapatam).

Genyoroge coeruleopunctata GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 182 (copied).—DAY, Fishes of Malabar, 1865, p. 7.—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Ceylon).

Genyoroge caeruleopunctata DAY, Proc. Zool. Soc. London, 1865, p. 8 (Cochin); 1870, p. 679 (Andamans).

Lutianus caeruleo-punctatus Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).

Diacope alboguttata Valenciennes, Hist. Nat. Poiss., vol. 7, 1831, p. 445. Malabar; Bombay.—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.

Genyoroge alboguttata Day, Fishes of Malabar, 1865, p. 9 (copied).

Mesoprion myriaster Liénard, Mem. Soc. Hist. Nat. Maurice, 1839, p. 32. Mauritius.

Diacope sinal Thiollière, Fauna Woodlark, 1857, p. 145. Woodlark Island.

Mesoprion quadripunctatus (Frank) Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 183. Amboyna. (Name in text.)

Mesoprion parvidens Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 234. New Guinea.

Mesoprion obscurus (Döderlein) Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 236 (name in text).

Depth 2 to 2¼; head 2⅓ to 2½, width 1⅘ to 2¼. Snout 2⅖ to 3 in head; eye 4⅓ to 7⅓, 1⅞ to 3 in snout, 1 to 2 in interorbital; maxillary reaches eye, expansion 1 to 1⅘ in eye, length 2⅓ to 2⅔ in head; lips moderate, coriaceous; teeth villiform, in bands in jaws, with outer enlarged and slightly conic row, of which several in front of each jaw and one usually in each jaw medio-laterally as slight canines; crescentic band of villiform teeth on vomer and short patch on each palatine; interorbital 3⅘ to 5 in head, moderately convex; hind preopercle edge serrate, with slight gash above angle opposite moderate opercular knob. Gill rakers 6+13, lanceolate, equal gill filaments or ½ of eye.

Scales 40 to 47 in lateral line to caudal base and 10 or 11 more on latter; 8 or 9 scales above lateral line, 17 below, 11 to 13 predorsal, 6 or 7 rows across cheek to preopercle ridge angle. Scales with 13 basal radiating striae; apical denticles 82 to 106, with 7 to 15 transverse series or basal elements; circuli fine.

D. X, 15, i, third spine 2¾ to 2⅘ in head, fourth ray 2⅛ to 2½; A. III, 8, i, third spine 3⅛ to 3⅕, fourth ray 2 to 2⅛; caudal 1⅓ to 1⅖, little emarginate behind; least depth of caudal peduncle 3 to 3⅛; pectoral 1⅒ to 1⅛; ventral 1½ to 1⅗.

Back drab brown, shading paler on sides below to whitish on under surface. Pearl white spot opposite soft dorsal origin on lateral line about three scale exposures. Each scale on back and sides with gray or gray blue dot, above lateral line following in oblique rows and below in horizontal rows; dots also extend on basal scales of dorsals and caudal, though much smaller and more crowded. Side of head with longitudinal gray or bluish lines, each bordered narrowly with deeper gray, often broken as bars, blotches or spots and very variable; lines form bands across front of head or at least five across interorbital space. Fins all dull brownish. Iris yellowish brown.

Red Sea, Arabia, Zanzibar, Natal, Réunion, Mauritius, India, Ceylon, Andamans, East Indies, Philippines, Cochin, China, Formosa, Riu Kiu, Japan, Melanesia, Polynesia.

Cuvier's figure of *Diacope rivulata* shows the vertical fins and ventral quite dark, though my materials do not have them especially dark and the ventrals are only slightly dusky terminally. Cuvier's figure also does not show the bluish lines across the interorbital or the front of the head and lacks the white spot on the lateral line. The *Kalee maee* of Russell, though rather fantastic as he figures it, it surely synonymous.

Mesoprion myriaster of Liénard, according to Sauvage is olive green, little paler below. Cheeks yellowish green, below rose and anteriorly with blue lines with darker borders. Body covered with small, clear blue dots. According to Day, after reaching 381 mm. the white spot on the lateral line disappears, though the white dots strewn over the body scales persist.

8617. Biri Channel, Balicuatro Islands. June 1, 1909. Length 633 mm.

7833. Bugsuk Island. January 5, 1909. Length 375 mm.

12872. Cotabato, below mouth of Rio Mindanao. May 20, 1908. Length 146 mm. [637.] Olivaceous; bluish specks at bases of scales, most marked above anteriorly; head washed with yellowish, with blue stripes running across forehead and interorbital region and longitudinally under eye; dorsal yellowish olive; incised tips of membranes orange, carried somewhat across soft dorsal; caudal similar to soft dorsal, edges of lobes brownish; anal similar to other verticals but much darker in front and at margin; ventral blackish; pectoral yellowish, dusky at base and in axil.

22166. Davao, Mindanao. May 16, 1908. Length 57 mm.

7487, 7507. Endeavor Strait, near anchorage, Palawan. December 22, 1908. Length 280 to 374 mm.

6097 to 6099. Iloilo market, Panay Island. May 31, 1908. Length 200 to 288 mm. Back and upper side yellowish olive, fading to nearly gray. Lower surfaces white, with dusky and dull reddish shades, red most marked in small example. Each scale of back with small bluish white spot in center of base, become more irregular posteriorly and diffuse on middle of side. White blotch about size of pupil on and above lateral line about under third soft dorsal ray. Head with more yellowish shades, crossed by numerous more or less wavy narrow bluish lines limited by dark one either side, these apparently increasing with age. Interopercle dull red, with reticulating lines, otherwise like rest of head and colors continued on mandible base distinctly in younger example. Dorsal dusky yellow, spinous membranes orange terminally. Caudal body color.

6216. Mantaquin Bay, Palawan. April 2, 1909. Length 102 mm.

9223. Opol, Mindanao. August 4, 1909. Length 235 mm.

5880. Polloc, Mindanao. May 22, 1908. Length 400 mm. Bronze olive, paler below, bronze shading into orange, edges of scales lighter and small blue spot near center of each, occasionally 2. Slaty blue lines cross forehead, interorbital and snout, more or less horizontal on side of head, interrupted on opercle. Lips pale. Throat smoky. Fins dusky, tips of soft verticals more or less yellowish.

7059, 7060. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 400 to 682 mm. [7060.] Lines on head very distinct, blue centers with darker margins; spots on scales of back and sides more or less oblong; sometimes several on each scale, smaller ones round, in all cases limited by darker margin; membranes of dorsal, caudal, anal and paired fins more or less yellowish, most distinct on margin of dorsal and tip of caudal. [7059.] Spots on scales almost all round, except about base of pectoral; yellow margin of dorsal and caudal distinct; lower fins darker; general bronzy ground color becoming orange below, same in each.

9132. San Roque, Leyte. July 29, 1909. Length 287 mm.

17555. Sorsogon market. March 12, 1909. Length 73 mm.

A763. Mabul Island, Borneo. September 29, 1909. Length 510 mm.

A1072. Maitara Island. November 26, 1909. Length 435 mm. Dorsal membranes dusky yellow, also naked soft membrane, no obvious spots in upper or pointed part of soft portion; lower jaw, breast and belly with bright orange; pectorals without white.

A1576. Soo Wan, East Formosa. January 29, 1910. Length 260 mm.

52382 U.S.N.M. Samoa. Bureau of Fisheries. Length 239 mm.

57918 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 23 to 73 mm. 3 examples.

57935 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 36 to 74 mm. 4 examples.

58016 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 344 mm.

75901 U.S.N.M. Borneo. H. C. Raven. Length 200 to 227 mm. 2 examples.

27592 to 27593 A. N. S. P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 170 to 193 mm. When fresh in arrack dull olivaceous dusky above, more or less uniform, below paler, tinged deep rosy. Five dark olivaceous dusky transverse bands on side above. Head with numerous longitudinal slate-gray lines, variably broken and with distinct dark edges. Whitish ocellus size of pupil below first dorsal rays. Each scale of body with pale median tract leaving dusky margin. Spinous dorsal pale brown, rayed vertical fins otherwise darker. Soft anal blackish. Paired fins blackish medially, edges pale or whitish. As *Lutianus caerulo-punctatus.*

LUTJANUS VAIGIENSIS (Quoy and Gaimard)

Diacope vaigiensis Quoy and Gaimard, Voy. Uranie, Zool., pt. 7, Dec. 18, 1824, p. 307. Waigiu.

Mesoprion waigiensis Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 191 (Port Essington).—Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1879, p. 266. (Cape Grenville).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 43 (locality?).—Kent, Great Barrier Reef, 1893, p. 370 (Queensland).

Lutianus vaigiensis Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 457, fig. 4 (Riu Kiu, Apia, Formosa).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., Vertebr., 1920, p. 151 (Ogasawara-jima).

Lutianus waigiensis Barnard, Annal. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 656 (Natal; Mozambique).

Lutjanus vaigiensis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 200 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Thornton Island, Palmyra, Guam, Samoa, Nukuhiva, Faté, Shortland Island, Padang).

Diacope marginata Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 425. Pondicherry; Oualan.—Jenyns, Zool. Voy. Beagle, Fishes, pt. 4, 1842, p. 12 (Keeling Islands).—Peters, Arch. Naturg., 1855, p. 328 (Mozambique).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 100, pl. 12, fig. 3 (types).

Genyoroge marginata Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 181 (Ceylon; Amboina; Louisiades).—Schmeltz, Cat. Mus. Godeffroy, No. 2, 1865, p. 6 (Samoa).—Playfair, Fishes of Zanzibar, 1866, p. 16 (Zanzibar).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Upolu).—Day, Proc. Zool. Soc. London, 1870, p. 679 (Andamans).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 37 (Samoa).—Káröli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 150 (Ceylon).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (South Seas).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (North Celebes; Tabukan, Sangi; Ternate).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1899, p. 487 (Thornton Island); 1900, p. 527 (Samoa).

Lutjanus marginatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 68, pl. (71) 349, fig. 2 (Sumatra, Cocos, Java, Bali, Celebes, Sangir, Timor, Halmaheira, Ternate, Batjan, Obi Major, Buru, Ceram, Amboina, Banda, Waigiu, New Guinea); Verh. Akad. Wet. Amsterdam, vol. 18, No. 3, 1879, p. 1 (Mauritius).—Steindachner and Döderlein, Denkschr, Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 236 (Kagoshima).—Day, Fauna Brit. India, Fishes, vol. 1, 1881, p. 478.—Steindachner, Abh. Senckenberg. Ges., vol. 25, 1900, p. 415 (Batjan, Halmaheira, Ternate).—Beaufort, Bidj. Dierk., Amsterdam, pt. 9, 1913, p. 117 (Sanara, Sula Islands; Ambon).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 252 (Menado, Lirung, Salibabu; Laiwui, Obi Major; Kawa, West Ceram; Saleyer; Nusa Laut).—Fowler, Bull. Bishop Mus., No. 22, 1925, p. 9 (Guam), p. 33 (Samoa).—Fowler and Ball, Bull. Bishop Mus., No. 26, 1925, p. 14 (Wake Island).—Fowler, Bull. Bishop Mus., No. 38, 1927, p. 15 (Palmyra, Fanning, Jarvis Islands).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, 1927, p. 6 (Poeloe Toekus Island and Benkoelen, Sumatra).—Fowler, Proc. Acad. Nat. Sci., Philadelphia, 1927, p. 277 (San Fernando, Santa Maria, Vigan, Calapan); Mem. Bishop Mus., vol. 10, 1928, p. 200 (Fiji, Samoa, type of *Lutianus marginatoides*, Borabora, Makemo, Truck, Arhno, Kusaie, Suva, Rikitea, Mangareva, Apia, Tahiti, Ascension, Thornton, Shortland, Faté, Tubuai, Nukuhiva, Guam, Palmyra, Wake Islands).—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Lutianus marginatus Day, Fishes of India, pt. 1, 1875, p. 44, pl. 13, fig. 5 (Madras).—Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 263 (Pago Pago; Apia).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—Regan, Ann. Natal Mus., vol. 1, 1908, p. 244 (Durban Bay).—Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 86 (Paumotus; Society Islands; Truck; Marshalls; Gilberts).—Kendall and Radcliffe, Mem. Mus. Comp. Zoöl., vol. 35, 1912, p. 112 (Mangareva).—Pearson, Ceylon Administr. Report, 1915–18, p. F16.—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 344 (references).—Malpas, Ceylon Administr. Report, 1921, pp. E6, E7.

Lutjanus (*Genyoroge*) *marginatus* Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 128 (Bal Haf, Sokotra).

Diacope immaculata (Quoy and Gaimard) Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 430. Waigiu.

Mesoprion immaculatus Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 471. Sumatra.

Diacope xanthopus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 495. Trinquemale, Ceylon.

Diacope axillaris Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 532. East Indies; Vanicolo.

Mesoprion caudalis Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 537. Vanicolo.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 191 (copied).

Lutjanus caudalis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 202 (copied).

Diacope calveti (not Quoy and Gaimard) Schlegel, Fauna Japonica, Poiss., pt. 1, 1842, p. 14 (Nagasaki).

Mesoprion gaimardi Bleeker, Act. Soc. Sci. Ind. Néerland. (Enumerat.), vol. 6, 1859, p. 23. Waigiu.

Mesoprion rubens Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 232. New Guinea.

Lutjanus rubens Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 201 (compiled).

Mesoprion marginipinnis Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 254. Normanby Island, in fresh water, New Guinea.

Mesoprion kagoshimana (Döderlein) Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 236. Kagoshima. (Name in text.)

Mesoprion mahogoni (not Cuvier) Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (Macassar, South Celebes).

Lutianus marginatoides Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 287, pl. 4, fig. 1. Makemo, Paumotus Islands.

Depth 2¼ to 2⅘; head 2⅖ to 2⅗, width 2 to 2⅗. Snout 2⅖ to 3 in head; eye 4 to 4¾, 1 to 1⅔ in snout, greater than interorbital in young to 1⅖ with age; maxillary reaches ⅕ to ⅖ in eye, expansion 1⅗ to 2⅓ in eye, length 2⅓ to 2⅘ in head; lips rather narrow; teeth in rather narrow villiform bands in jaws, with outer row moderately enlarged, usually pair of small canines in front above; crescentic band of villiform teeth on vomer and another on each palatine; interorbital 3⅖ to 5⅓, convex; hind preopercle edge minutely serrated, with gash above angle with age receiving moderate bony interopercle knob. Gill rakers 6 or 7+10 or 11, lanceolate, equal gill filaments or 2⅓ to 3 in eye.

Scales 46 to 48 in lateral line to caudal base and 4 or 5 more on latter; 8 or 9 scales above lateral line, 14 or 15 below, 12 or 13 predorsal to occiput, 7 rows across cheek to angle of preopercle ridge. Scales with 12 to 16 basal radiating striae; apical denticles 97 to 118, with 5 to 9 transverse series of basal elements; circuli very fine.

D. X, 14, I, fourth spine 2⅘ to 2⅞ in head, seventh ray 3 to 3⅔; A. III, 7, I or 8, I, second spine 3 to 3⅗, third ray 2⅗ to 2¾; caudal 1⅓ to 1½, moderately emarginate; least depth of caudal peduncle 3 to 3¼; pectoral 1⅛ to 1¼; ventral 1⅔ to 2.

Back and upper surface brown, under sides paler and below whitish. Iris orange brown or yellow. Dorsals brown like back, also caudal and both soft dorsal and caudal narrowly edged with whitish, though these fins often deep drab dusky terminally to narrow white edge. Other fins all paler brown.

Arabia, Zanzibar, Mozambique, Natal, Mauritius, Réunion, Cocos Keeling, India, Ceylon, Andamans, East Indies, Philippines, Formosa, Riu Kiu, Japan, Queensland, New South Wales, Micronesia, Melanesia, Polynesia.

A rather uniformly colored species with large eye, blunt snout, and the dark soft dorsal and caudal contrasted by narrow white edges. Often in the young the caudal may be much darker. With age the body becomes more elongate, with a strong pair of upper front canines and a lower small pair, also 2 or 3 lower lateral canines. Though the original account by Quoy and Gaimard is based on a small specimen, it appears to be the young of the present wide ranging species.

Diacope immaculata Cuvier is said to have: D. X, 13; A. III, 9. Green, more brown on back, yellowish below, whitish on throat. Brown longitudinal lines on flanks, oblique on back. Resembles *Diacope calveti*, but that is less deep and less red. Length 100 or 128 mm.

Mesoprion immaculatus Cuvier is noticed: D. X, 13; A. III, 8. Brown or olivaceous, paler to yellowish or golden below. Blackish lines descend obliquely to lateral line and on flanks lines horizontal. Angle of [pre]opercle with but slight emargination. Length 178 or 204 mm.

Diacope xanthopus Cuvier, is said to have: D. X, 14; A. III. 9. Back reddish, below yellowish. Dorsal and caudal purple, somewhat blackish; dorsal border black and caudal not entirely with white border. Anal and ventral saffron yellow. Pectoral olive. Length 183 mm.

Diacope axillaris Valenciennes is based on a drawing by Kittlitz: D. X, 15; A. III, 9. Body carmine red, with oblique streaks forming rows of rosy dots. Fins red, deeper colored than body, bordered black with white edge. Spinous dorsal orange. Yellow spot at pectoral base, fin orange. Ventral yellow. Length 178 mm. Valenciennes also notices another example obtained by Quoy and Gaimard at Vanicolo. Reddish brown, back deeper, rows of white spots forming oblique streaks on back above lateral line, but not below. Ventral yellow. Length 205 mm.

Mesoprion caudalis Valenciennes is described with slightly rounded caudal fin and is based on an example 152 mm. Possibly it may have been intended for the present species.

8143, 8145, 12992, 16604, 16605, 17748. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 218 to 253 mm.

6505. Balikias Bay, Luzon. July 17, 1908. Length 242 mm.

20286. Below mouth Mindanao River, Cotabato, Mindanao. May 20, 1908. Length 47 mm.

7472, 7473. Bolalo Bay, Palawan. December 21, 1908. Length 240 to 262 mm.

20364, 20365. Bolinao Bay, Luzon. May 10, 1909. Length 208 to 210 mm.

8870. Buang Bay, Talajit Island. March 15, 1909. Length 318 mm.

19111. Buena Vista, Guimaras Island, Iloilo Strait. January 14, 1909. Length 115 mm.

5626, 5633. Busin Harbor, Burias Island. April 22, 1908. Length 222 to 253 mm.

11051. Busin Harbor. March 8, 1909. Length 202 mm.

8270, 11796. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 210 to 310 mm.

5970, 5971. Cavite market. December 1, 1908. Length 81 to 87 mm.

8166 [1861]. Cebu market. August 29, 1909. Length 75 mm.

21919, 21920. Cebu market. September 1, 1909. Length 74 to 98 mm.

11727. Cotabato, Mindanao. May 20, 1908. Length 114 mm.

19711, 22167. Davao, Mindanao. May 16, 1908. Length 54 to 98 mm.

7489. Endeavor Strait, near anchorage, Palawan. December 22, 1908. Length 258 mm. Orange on maxillary and broken dashes backward from maxillary to base of pectoral; dorsal with more or less vermilion, soft portion and caudal dusky; lower fins bright yellow; pectoral pale orange; no lateral blotch.

7551, 7560, 7561, 7583, 12487. Endeavor Strait, near anchorage, Palawan. December 23, 1908. Length 221 to 310 mm. [7551]. Orange on side of head, but no lateral stripes; upper fins dusky; soft dorsal and caudal tipped with white; lower fins yellow. [17560, 7561]. Slaty with orange scarlet shades; black dusky, below pale cadmium; lower fins bright cadmium, upper dusky with vermilion wash; edge of soft dorsal white. [7583]. Dark reddish shades and above and on upper fins; lower side and below white, more or less red washes; side of head with small orange spots; side of body with ill-defined narrow brownish stripes; caudal with white margin in fork; anterior tip of soft dorsal white; lower fins more or less orange.

4942. Iloilo market, Panay. March 29, 1908. Length 108 mm.

13980. Iloilo market. May 31, 1908. Length 180 mm.

13189. Iloilo market. June 1, 1908. Length 157 mm.

7924. Limbones Cove, Luzon. February 8, 1909. Length 205 mm. Top of head with lilac and reddish shades; back pale olive; each scale with a dash of bright yellow, in the center forming obscure stripes, horizontal above lateral line, horizontal and more pronounced below; dorsal reddish brown terminally, purplish black wash on rays, extreme margin in fork white; paired and anal fins bright yellow; from maxillary across lower cheek spots and dashes of orange; chin and breast white, latter with slight yellow wash.

19876. Luzon shore, San Vicente Harbor. November 13, 1908. Length 81 mm.

5407, 5408. Mactan Cove, Mactan Island. April 6, 1908. Length 202 to 212 mm. Olivaceous above, white below, with more or less of orange wash on head, side and lower part; sulphur yellow above eye. Dorsal and caudal dusky vermilion; tips of spines and rays of dorsal white; a dusky band centrally on posterior spinous and soft part and cadmium yellow, tipped with white, on soft rays; caudal white, tipped within fork; paired fins cadmium yellow; mouth white inside; iris silvery.

8836. Maculabo Island. June 14, 1909. Length 238 mm.

19353, 19354. Mahinog, Camiguin Island. August 3, 1909. Length 74 to 115 mm.

9071. Malhon Island, Samar-Leyte. July 27, 1909. Length 305 mm. Brassy yellow wash over posterior side of head and all of body showing brightest in centers of scales; dorsal dusky scarlet in exposed membranes and rays, scaled portion similar to back; tip of soft dorsal whitish; caudal dusky vermilion, tip broadly white; paired fins and anal bright yellow; usual orange spots along lower side of head.

Two examples [1099, 1102]. Mariveles wharf. January 30, 1909. Length 114 to 160 mm. [1099]. Entire side with golden reflections; top of head very dark, with dusky crimson shades anteriorly; back dark olive; oblique rows of scales with narrow obscure brown stripe through center; lower head dusky, side with more or less dusky vermilion and crimson shades; sometimes latter appearing between tip of maxillary and edge of interopercle; side of chest with orange; dorsal vermilion at base, the terminal portion more or less shaded with black; tips of posterior half dozen spines and soft portion hyaline whitish; more or less definite translucent bar just above middle of fin; caudal vermilion, overshaded with black, tip in fork white; anal orange, soft tip dusky, extreme margin white; ventrals cadmium orange; pectorals pale hyaline cadmium, rays slightly dusky. [1102]. About nine longitudinal lines of bright golden, interspaces between these more silvery but somewhat washed with golden; anterior head with reddish shades, top dark; obscure blotch about half size of pupil just above lateral line below first three soft dorsal rays; dorsal golden olive, more or less dusky towards tip; colors of soft portion dusky; caudal and anal similar to soft dorsal; ventrals clear yellow; pectorals similar, but paler, axil slightly darker.

8586. Matnog Bay. May 31, 1909. Length 225 mm.

15520. Pandanon Island. March 24, 1909. Length 242 mm.

8183. Port Busin, Burias Island. March 8, 1909. Length 223 mm. General shade yellow; golden below and much modified with olive above; head with reddish wash; oblique rows of scales above lateral line with yellow stripe through centers, showing most distinctly after fish has faded; similar stripes on rays below lateral line, but somewhat less distinct; dorsal and caudal dusky vermilion, becoming blackish terminally; soft dorsal and caudal with white tips; lower fins bright yellow, including pectorals; lower cheek with some broken orange spotting, not distinct.

6345, 6378, 12962, 18871. Port Jamelo. July 13, 1908. Length 140 to 283 mm.

6549. Port Maricaban. July 21, 1908. Length 273 mm.

16532. Port Matalvi. November 22, 1908. Length 168 mm.

13475 to 13477, 13479. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 55 to 106 mm.

6180 to 6182, 6191, 6192, 7020, 7050, 7056, 7068, 7069, 7071, 8349, 11306, 15198, 17440. Port San Pio Quinto. November 11, 1908. Length 65 to 280 mm. 22 examples. One shows dark vermiculations on lower side of head. [7050, 7051]. Silvery gray with yellow overshades. Head more or less red anteriorly. Dorsal and caudal dusky vermilion; soft dorsal and fork of caudal narrowly margined white. Lower fins cadmium yellow. [7061]. Prevailing color red, overshaded with browns on top of head and back, becoming bright on lower surface; scales throughout more or less palish silvery centered on body, but only on posterior edge on head; vertical fins edged and margined with dark brown; ventral with dash of brownish terminally and upper portion of pectoral brown, internally above and on upper portion of axil very dark brown; this may entirely fade away; iris and nasal furrows reddish. [7062, 7063]. Identically same colors as 7061. [7064, 7065, 7066, 7067]. General color red, overshaded with dusky above; centers of scales of upper side and back paler; lower surface silvery, washed with red; fins red, all more or less with brownish shades marginally except caudal, which darkest on base, bright red at tip except for narrow line of blackish on extreme tip and narrow margin of white and black in fork; soft dorsal and anal narrowly margined with white on black. Pectoral axil dark before fading. [7068].

More or less olivaceous and yellowish; pale below; orange markings on lower head and under base of pectoral; dorsal and caudal brownish red, caudal darkest; soft dorsal and top of caudal with white; other fins yellow. [7069, 7070, 7071]. Same as above. [7072, 7073]. Dusky above with orange shades on lower side and side of head; dorsal and caudal orange terminally, other fins with yellowish shades. [7074]. Similar to 7072 and 7073 except dorsal and caudal without orange; lateral blotch more pronounced and black blotch at upper base of pectoral.

14969 [1263]. Refugio Island, Pasacao, Luzon. March 9, 1909. Length 57 mm. Lips yellow, dusky at top of head and anterior back; lower surface pale yellow; about four distinct yellow stripes on lower side; one from upper angle of gill opening to top of caudal peduncle, second from behind lower side of eye, above point of opercle, to lateral line on caudal peduncle; third from maxillary across cheek under eye, above base of pectoral, to caudal peduncle; fourth across lower cheek and interopercle and apparent behind base of pectoral; dorsal hyaline, yellowish at base, becoming dark red brown at tip with extreme margin pale; caudal with dusky reddish brown shades, lower fins bright cadmium yellow; pectorals very pale lemon yellow.

14766, 22506 [478], 22505. Romblon, March 26, 1908. Length 115 to 138 mm. Olive above, centers of scales pale; lower sides washed with bright yellow, tending to fall into stripes on rows of scales; throat, breast and belly white; top of head olive, few orange spots on lower preopercle and interopercle; dorsal spines and soft portion narrowly tipped with white; under this seal brown bar merging into orange most distinctly anteriorly; an olive bar below; basal half of membranes nearly hyaline; caudal narrowly tipped with white; body of fin slaty with a reddish wash terminally; anal bright yellow, tipped with white on anterior rays; ventral bright yellow; pectoral pale yellow; iris brown and silvery; mouth white inside.

5693, 5694, 5942, 16979, 16980, 15783 to 15785. Sabtan Island. November 8, 1908. Length 170 to 207 mm.

7070, 7078 [1754]. San Roque, Leyte. July 29, 1909. Length 158 to 255 mm. Shows distinct brown stripe on alternate scale rows under lateral line and on each of oblique rows above on anterior part of body, changing into irregular horizontal lines under soft dorsal.

8814, 21664, 21665. Santiago River, Pagagas Bay, Luzon. February 20, 1909. Length 98 to 130 mm.

8343, 8344. Subig Bay. January 7, 1908. Length 130 to 138 mm.

7340. Tara Island. December 14, 1908. Length 488 mm.

7365. Tara Island. December 15, 1908. Length 210 mm.

6451, 20550, 20551. Tilig, Lubang. July 14, 1908. Length 41 to 236 mm.

6471, 10884, 18881. Tilig. July 15, 1908. Length 143 to 265 mm.

7707. Ulugan Bay near Rita Island, Palawan. December 29, 1908. Length 261 mm.

6629, 18741. Varadero Bay, Mindoro. July 23, 1908. Length 150 to 267 mm.

6953, 6994. West coast of Sabtan Island. November 8–9, 1908. Length 233 to 250 mm.

21320. Uki, Boero Island, Dutch East Indies. December 9, 1909. Length 65 mm.

13686. Cape Kait, Libani Bay, Celebes. December 29, 1909. Length 208 mm.

A1104. Makyan Island. November 28, 909. Length 273 mm.

13582. Talisse Island. September 9, 1909. Length 198 mm.

A1565, A1568, A1569. Nan Wan, Formose. January 25, 1910. Length 250 to 266 mm.

6247 U.S.N.M. Tahiti. W. Stimpson. Length 167 mm.

32717 U.S.N.M. Indian Archipelago. Royal Leiden Museum. Length 138 mm. As *Lutjanus marginatus.*

41555 U.S.N.M. Samoa. Dr. C. H. White. Length 170 mm. As *Lutjanus marginatus.*

One example (with 52421 U.S.N.M.). Apia, Samoa. Bureau of Fisheries. Length 83 mm.

57957 U.S.N.M. Philippines. Dr. E. A. Mearns. Length 48 to 85 mm. 3 examples. As *Lutjanus marginatus.*

27586 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 249 mm. When fresh in arrack pale orange brown. Above lateral line a number of oblique pale olive lines extending from lateral line to dorsal base, those on caudal peduncle more or less horizontal. Fins brown, vertical deeper and the upper edge of soft dorsal and hind caudal edge narrowly white.

LUTJANUS LUNULATUS (Park)

Perca lunulata PARK, Trans. Linn. Soc. London, vol. 3, 1797, p. 37, pl. 6. Sumatra.

Lutianus lunulatus SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 329 (Sumatra).—DAY, Fishes of India, pt. 1, 1875, p. 41, pl. 12, fig. 4 (Sind coast).—FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907) p. 80 (Bulan).—PEARSON, Ceylon Administr. Report, 1915–18, p. F 15.

Lutjanus lunulatus LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, p. 213 (on PARK).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (17) 295, fig. 1; vol. 8, 1876–1877, p. 66 (Sumatra; Celebes).—DAY, Fauna Brit. India, Fishes, vol. 1, 1888, p. 475.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Padang).

Lutjanus (*Mesoprion*) *lnnulatus* ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-phys. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).

Mesoprion lunulatus CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 477 (copied).

Diacope bitaeniata VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 536. Celebes.—QUOY and GAIMARD, Voy. Astrolabe, Zool., vol. 3, 1834, p. 664, pl. 5, fig. 2.

Mesoprion bitaeniatus GÜNTHER, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 191 (copied).—SCHMELTZ, Cat. Mus. Godeffroy, No. 1, 1864, p. 7 (East Indies); No. 2, 1865, p. 6 (East Indies); No. 3, 1866, p. 7 (East Indies).

Depth 2⅘; head 2½, width 2⅖. Snout 2¾ in head from snout tip; eye 4⅕, 1⅗ in snout, greater than interorbital; maxillary reaches eye, expansion 1¾ in eye, length 2⅖ in head; narrow band of villiform teeth in jaws, outer series enlarged with pair of wide set canines in front above and several enlarged teeth along sides of mandible; broadly angular band of villiform teeth on vomer, small band on palatines and 2 rounded patches on tongue; interorbital 5⅖, broadly convex; hind preopercle edge finely denticulate, with slight emargination below and few denticles, coarser, around angle. Gill rakers 1+7, with 4 rudiments above and five below, lanceolate, much greater than gill filaments or ½ of eye.

Scales 52 in lateral line along below to caudal base; 8 above, 15 below, 15 predorsal; 50 pores in lateral line to caudal base. Scales with 10 to 12 basal radiating striae; 60 to 65 apical denticles, with 5 to 10 transverse series of basal elements; circuli fine.

D. X, 13, I, third spine 2⅔ in head, first ray 2⅘; A. III, 8, I, second spine 3⅛, first ray 2⅗; caudal 1⅓, emarginate; least depth of caudal peduncle 3⅛; pectoral 1¼; ventral 1¾.

Brown generally, below whitish. Caudal with deep, dusky crescent bent back on fin base.

India, East Indies, Philippines. A small species, known chiefly by the dark crescent in the caudal fin. Day says it reaches 255 mm.

Diacope bitaeniata Valenciennes is described: With oblique rows of scales above the lateral line and horizontal rows below; two red lines on cheek below and transverse black band on middle of caudal; body yellowish, with silvery reflections; head brown above; dorsal red, spinous fin bordered red brown and soft fin greenish; anal yellow, with red on spines; ventral yellow.

27583 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 183 mm. When fresh in arrack brown, back with pale and darker oblique lines sloping up to base of upper profile from lateral line and below paler, fading below and extending horizontally. Caudal with deep brownish black crescent bent back on fin base and extending up to tips above and below. Pectoral axil pale. Fins otherwise pale brown.

LUTJANUS FLAVIPES (Valenciennes)

Diacope flavipes VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 534. · Vanicolo.

Lutjanus flavipes BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 68, pl. (53) 331, fig. 5 (Amboina).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 200 (compiled).

Diacope analis (not *Mesoprion analis* CUVIER 1828) VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 534. Mauritius; New Guinea.—GUICHENOT, Notes Ile Réunion, vol. 2, 1862, p. 23.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 103, pl. 13, figs. 2, *a–c* (types; Madagascar).

Diacope aurantiaca VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 536. Vanicolo.

Lutianus aurantiacus BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 657 (Natal).

Depth 2½ to 2⅗; head 2⅗ to 2⅔, width 2½ to 3. Snout 3 to 3⅓ in head; eye 3⅞ to 4¼, 1⅕ to 1¼ in snout, greater than interorbital; maxillary reaches ⅖ to ½ in eye, expansion 1⅘ to 2 in eye; teeth in villiform bands in jaws, outer row in each enlarged, pair of front canines in front of upper jaw, also 8 outer front lower teeth and 2 on each side of mandible moderately large; band of fine villiform teeth across vomer and on each palatine; interorbital 4¾ to 5⅖, very slightly convex; preopercle edge denticulate, but slight emargination above angle. Gill rakers 6+12, several above and below as rudiments, lanceolate, equal gill filaments or ½ of eye.

Scales 60 or 62 along above lateral line to caudal base and 9 or 10 more on latter; tubular scales 46 to 50 in lateral line to caudal base and 5 to 8 more on latter; 8 scales above lateral line, 17 to 19 below, 15 to 17 predorsal to occiput, 7 rows on cheek. Scales with 11 to 13 basal radiating striae; apical denticles 50 to 60 minute spines, with 4 to 7 transverse series of basal elements; circuli very fine.

D. X, 13, i to 15, i, third dorsal spine 2¼ to 2⅔ in head, first ray 2⅓ to 2⅖; A. III, 8, i or 9, i, third spine 2⅗ to 2⅘, first ray 2 to 2⅒; caudal 1⅓ to 1⅖, little emarginate behind; least depth of caudal peduncle 2¾ to 3; pectoral 1⅓ to 1⅖; ventral 1⅗.

Back and upper surfaces brown, below paler and under surfaces whitish. Broad dusky brown band from eye horizontally to and on caudal, nearly wide as eye, upper and lower edges each with diffuse narrower whitish band. Iris gray white. Dorsals pale or dull brownish basally, each fin broadly bordered dusky. Caudal largely dusky, at least over terminal portion. Other fins all pale, pectoral and anal slightly brownish terminally and ventrals yellowish.

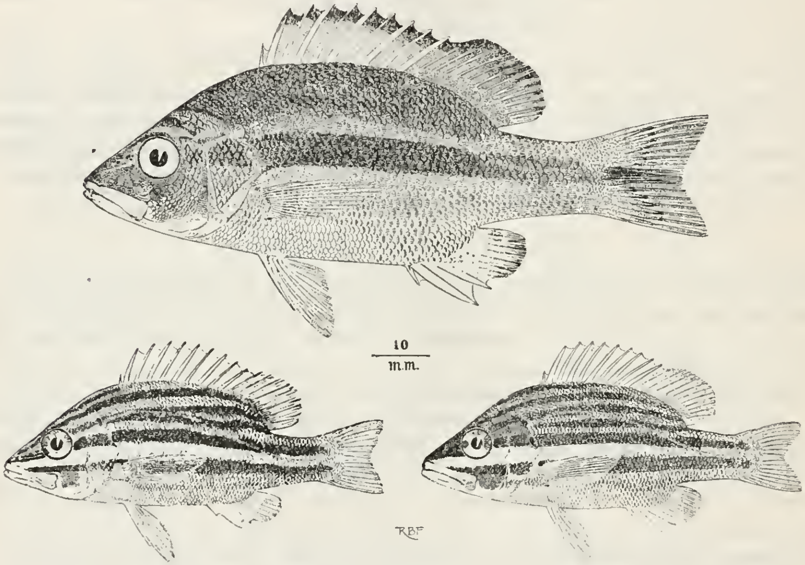

Figure 12.—Lutjanus flavipes (Valenciennes). Variation of young

Mauritius, Madagascar, Natal, Réunion, East Indies, Melanesia. A well-marked species. As figured by Bleeker my largest example does not show the two lower pale or yellow lateral bands. Two small examples, which I believe to be the young, show a pearly white band from the snout tip over the infraorbital, medial alongside above pectoral base to caudal base medially. This, like another similar small one, both have in addition four narrower white lines above and another below.

One example. Cebu market. March 20, 1909. Length 69 mm.

21816. Philippines. Length 68 mm.

11674 [1112]. Mariveles Bay. January 30, 1909. Length 113? mm. Dusky band from eye to caudal base width of eye. Two narrow brown bands ⅓ width of pupil parallel to first, begin at nose and pass directly across head under eye above pectoral base; second from mouth corner mostly through lower pectoral base to about axil of anal. Markings of dorsal and anal at dark borders. Caudal blackish, with pale margin. Olive brownish of back and top of head ceases sharply about level of top of caudal peduncle, leaving pale streak between to lateral band. Paired fins more or less orange.

LUTJANUS MONOSTIGMA (Cuvier)

Mesoprion monostigma Cuvier, Hist. Nat. Poiss., vol. 2, 1828. p. 446. Seychelles.—Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 14, pl. 16 (Kingsmills, Society Islands, Paumotus).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Mortlock Island).

Diacope monostigma Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 702 (Koseir, Red Sea).

Lutjanus monostigma Sauvage, Hist. Nat. Madagascar, 1891, p. 86.—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 117 (Saonek and Batu merah, Ambon).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 25 (Labuan Badjo, Flores; Beo, Karakelang Island; Lirung; Salibabu).—Fowler, Bull. Bishop Mus., No. 22, 1925, p. 9 (Guam).—Fowler and Ball, Bull. Bishop Mus., No. 26, 1925, p. 14 (Wake Island).—Fowler, Bull. Bishop Mus., No. 38, 1927, p. 15 (Palmyra, Washington, Jarvis, Baker Islands); Mem. Bishop Mus., vol. 10, 1928, p. 202, pl. 18B (Fatė, Tubuai, Shortland, Nukuhiva, Guam, Rarotonga, Palmyra, Wake, New Guinea, Apia, Makemo, Makatea, Taritari, Anaa, Moen); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Palmyra, Rarotonga, Fatė, Shortland Island, Padang).

Lutianus monostigma Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 264 (Apia; Pago Pago).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 79 (Bacon).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 287 (Paumotus; Truk; Gilberts).—Seale, Philippine Journ. Sci., vol. 9, No. 1, 1914, p. 66 (Hong Kong).

Lutjanus lioglossus Bleeker, Verh. Akad. Wet. Amsterdam (Lutjan.), vol. 13, No. 4, 1873, p. 74 (Bintang, Java, Celebes, Halmaheira, Amboina); Atlas Ichth. Ind. Neerland., vol. 8, 1876–1877, p. 70, pl. (66)344, fig. 4 (Bintang, Java, Celebes, Halmaheira, Amboina).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 473.—Steindachner, Abh. Senckenberg. Ges., vol. 25, 1900, p. 415 (Batjan).—Borsieri, Ann. Mus. Civ. Stor. Nat. Genova, vol. 41, 1904, p. 193 (Massaua).

Lutianus lioglossus Day, Fishes of India, pt., 1, 1875, p. 39, pl. 12, fig. 1.—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).—Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 479 (Okinawa).

Mesoprion lioglossus Kluzinger, Fische Roth. Meer., 1884, p. 14 (Koseir).

Depth 2⅖ to 3; head 2⅖ to 2⅔, width 2⅘ to 3. Snout 2 to 3 in head from snout tip; eye 4 to 5⅕, 1⅖ to 2 in snout, greater than interorbital in young to subequal or 1⅛ with age: maxillary reaches midway in eye in young, to front eye edge or ⅕ in eye with age, expansion 1½ to 1⅘ in eye, length 2¼ to 2⅖ in head from snout tip; lips moderate; band of villiform teeth in each jaw anteriorly, with outer series conic and enlarged, at front above pair of well developed canines and lower laterals all large; narrow crescentic band of villiform teeth on vomer and long patch on each palatine; interorbital 3⅞ to 6¼, slightly convex; hind preopercle edge with obsolete or minute points and moderate emargination above angle receiving subopercular knob, less distinct with age. Gill rakers 7+12, lanceolate, ¾ of eye.

Scales 46 to 50 in lateral line to caudal base and 3 to 5 more on latter; 7 scales above lateral line, 14 below, 19 or 20 predorsal, 6 rows on cheek to preopercle angle. Suprascapula slightly denticulate. Scales with 15 to 22 basal radiating striae; apical denticles 121 to 168, with 7 to 11 transverse series of basal elements; circuli very fine.

D. X, 13, I, third spine 2⅞ to 3⅕ in total head length, seventh ray 3 to 4; A. III, 8, I, third spine 3½ to 5⅘, second ray 2⅔ to 3; caudal 1⅓ to 1½, moderately emarginate; least depth of caudal peduncle 3 to 3¼; pectoral 1⅓ to 1½; ventral 1⅘ to 2.

Generally dull brown above, lower sides paler and below whitish. On lateral line opposite soft dorsal origin blackish blotch over 4 or 5 scales; quite variable, as in small examples nearly large as the eye while in adult or large examples much smaller than pupil. Fins all uniform brown.

Red Sea, Madagascar, Seychelles, India, East Indies, Philippines, China, Riu Kiu, Melanesia, Micronesia, Polynesia. The physiognomy is easily known by the long pair of upper canines in the front of the jaw, while there are usually none in the front of the lower jaw, though 2 laterals below each side. Garrett's figure as published by Günther is a good likeness of this species, easily known by its rather elongate form, general uniform coloration, save for the variable black blotch on the lateral line, usually small.

8073, 8089, 8090, 8091, 8110, 8111, 18267, 18268, 18656, 18658. Alimango Bay, Burias Island. March 5, 1909. Length 218 to 318 mm.

A503. Balukbaluk Island. September 12, 1909. Length 330 mm.

8712. Batan and Rapurapu Islands. June 5, 1909. Length 396 mm.

8677. Batog Island. June 22, 1909. Length 403 mm.

7474. Bolalo Bay. December 21, 1908. Length 303 mm.

8357. Buang Bay, Talajit Island. March 15, 1909. Length 586 mm.

7834. Bugsuk Island, Balabac. January 5, 1909. Length 428 mm.

7104, 11052. Busin Harbor, Burias Island. March 8, 1909. Length 192 to 198 mm.

5614, 5634, 5641. Busin Harbor. April 22, 1908. Length 228 to 247 mm.

5885. Calangaman Island, Leyte, Cebu. March 16, 1909. Length 230 mm.

8271. Canmahala Bay, Luzon. March 11, 1909. Length 368 mm.

7737, 13320. Caxisigan Island, off Balabac. January 2, 1909. Length 256 to 388 mm.

7484. Endeavor Strait, Palawan. December 22, 1908. Length 310 mm.

5250, 5252, 7537, 7549, 7584, 15733. Endeavor Strait. Length 230 to 283 mm.

8237. Galvaney Island, Ragay Gulf, Luzon. March 9, 1909. Length 330 mm.

9111. Gigoso Point, Quinapundan Bay, Samar. July 28, 1909. Length 248 mm.

9253. Inamucan Bay, Mindanao. August 8, 1909. Length 286 mm.

8835. Maculabo Island. June 14, 1909. Length 320 mm.
9208. Mahinog, Camiguin Island. August 3, 1908. Length 388 mm.
21613. Makesi Island, Palawan. April 5, 1909. Length 228 mm.
9091. Malhon Island. July 27, 1909. Length 286 mm.
6195. Mansalay, Mindoro. June 4, 1908. Length 263 mm.
7230. Masinloc Bay, Zambales. November 22, 1908. Length 243 mm.
8591. Matnog Bay. May 31, 1909. Length 255 mm.
13447. Opol, Mindanao. August 4, 1909. Length 175 mm.
7949. Pagapas Bay, Luzon. February 20, 1909. Length 296 mm.
8195. Port Busin, Burias Island. March 8, 1909. Length 248 mm.
6548. Port Maricaban. July 21, 1908. Length 370 mm.
7016 to 7018. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 366 to 488 mm.
7072 to 7074, 17439. Port San Pio Quinto. November 11, 1908. Length 217 to 273 mm.
8969 to 8971. Rapurapu Island and Strait. June 22, 1909. Length 275 to 368 mm.
11179. Rasa Island, Mantaquin Bay, Palawan. April 1, 1909. Length 234 mm.
8908. Rosa Island, Lagony Gulf, Luzon. June 17, 1909. Length 466 mm.
5692, 16978. Sabtan Island. November 8, 1908. Length 203 to 204 mm.
A645, A647. Simaluc Sibi Sibi Island. September 23, 1909. Length 306 to 350 mm.
15193, 15194. Taganak Island. January 7, 1909. Length 226 to 228 mm.
6435. Tilig, Lubang. July 14, 1908. Length 283 mm.
6450, 6463 to 6465, 6468. Tilig. July 15, 1908. Length 242 to 350 mm.
7651. Ulugan Bay, Oyster Inlet, Palawan. December 28, 1908. Length 350 mm.
6569, 6631. Varadero Bay, Mindoro. July 23, 1908. Length 341 to 390 mm.
6956, 6995. West coast Sabtan Island. November 9, 1908. Length 338 to 368 mm.
A713. Si Amil Island, Borneo. September 27, 1909. Length 276 mm.
A745. Sipadan Island. September 28, 1909. Length 437 mm.
A866. Limbe Strait, Celebes. November 10, 1909. Length 513 mm.
A1073. Maitara Island. November 26, 1909. Length 405 mm. Head dusky vermilion above and pale scarlet below, back similar to top of head but with more or less wine-like shade, middle of side scarlet, below orange with some cadmium or yellow shades. Dorsal orange terminally, first three or four soft rays with hyaline tips; caudal bright orange; anal and ventrals similar, but with more yellow; pectoral red orange; iris silvery and red, brown above; lateral blotch very small, covering only two or three scales under lateral line.
A1206. Doworra Island. December 2, 1909. Length 237 mm.
A1430. Kapoposang, Macassar Strait. December 28, 1909. Length 325 mm.
52419 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 213 to 310 mm. 4 examples.
56130 U.S.N.M. Bacon, Philippines. Bureau of Fisheries (3640). Length 160 mm.
57904 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 73 to 98 mm. 2 examples.
57956 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 54 to 90 mm. 3 examples.
65944 U.S.N.M. Makemo Island. October 20, 1899. Length 128 to 220 mm. 2 examples.
65945 U.S.N.M. Tuamotus. *Albatross* Collection. Length 136 to 212 mm. 2 examples.

65946 U.S.N.M. Tuamotus. *Albatross* Collection. Length 205 mm.

65947 U.S.N.M. Tuamotus. *Albatross* Collection. Length 141 mm.

65948 U.S.N.M. Moen, Carolines. *Albatross* Collection. Length 38 to 82 mm. 5 examples.

71791 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection, 1906. Length 112 mm.

71914 U.S.N.M. Nafa. *Albatross* Collection, 1906. Length 195 mm.

27587 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 178 mm. When fresh in arrack dull olivaceous brown above, paler below and becoming whitish on abdomen. Each scale with small light spot so narrow, longitudinal lines form below lateral line and above narrow dark olivaceous bands follow inclined course of scales. On lateral line below last dorsal spine and front dorsal rays, black spot nearly equal to eye. Dorsal and caudal grayish. Anal and paired fins pale. Peritoneum silvery. As *Lutianus lioglossus.*

LUTJANUS FULVIFLAMMA (Forskål)

Sciaena fulviflamma Forskål, Descript. Animal., 1775, pp. xi, 45. Arabia.—Bonnaterre, Tabl. Ichth., 1788, p. 120 (Red Sea).—Gmelin, Syst. Nat. Linnaeus, vol. I, 1789, p. 1299 (Arabia).—Walbaum, Artedi Pisc., vol. 3, 1792, p. 316 (on Forskål).

Perca fulviflamma Schneider, Syst. Ichth., 1801, p. 90 (Red Sea).

Diacope fulviflamma Cuvier, Hist. Nat Poiss., vol. 2, 1828, p. 423 (Red Sea).—Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 72, pl. 19, fig. 2 (Red Sea); Neue Wirbelth, Fische, 1835, p. 94.—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 700 (Red Sea).—Kossmann and Räuber, Wiss. Ergebn. Reise Küstengeb. Roth. Meers, vol 1, 1877, p. 8.

Mesoprion fulviflamma Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 201 (Amboina, Ceram, China).—Day, Fishes of Malabar, 1865, p. 13; Proc. Zool. Soc. London, 1865, p. 12 (Cochin, Malabar).—Kner, Reise Novara, Fische, 1865, p. 35 (Ceylon, Java, Hong Kong).—Playfair, Fishes of Zanzibar, 1866, p. 17 (Aden. Zanzibar Seychelles).—Martens, Verh. zool. bot. Ges. Wien, vol. 16, 1866, p. 378 (Koseir, Red Sea).—Playfair, Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Kandavu).—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Larentuka, Flores).—Klunzinger, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 342 (Port Denison).—Günther, Philos. Trans. Roy. Soc. London, vol. 168, 1879, p. 470 (Rodriguez).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 38 (Kandavu; Savaii).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1880, p. 151 (Singapore).—Klunzinger, Fische Roth. Meer., 1884, p. 15.—Phöl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Kandavu).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (Cebu).—Boulenger, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, Vol. 17, 1888, p. 283 (Cebu, Manila Bay).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 460 (Cebu, Luzon, Manila Bay).—Jatzow and Lentz, Wiss. Ergebn. Reisen Madagaskar, Ost Afrika, vol. 1, 1899, p. 499 (Majunga).

Lutianus fulviflamma Day, Fishes of India, pt. 1, 1875, p. 41, pl. 12, fig. 6 (type of *Mesoprion monostigma*).—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 436 (Mauritius).—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 79 (Bacon and Zamboanga).—Seale, Philippine Journ. Sci., vol. 5, No. 4, October 1910, p. 275 (Sandakan, Borneo).—McCulloch, Biol. Res.

Endeavor, vol. 3, pt. 3, 1915, p. 141 (North Reef, Moreton Bay, Queensland, Port Moresby, New Guinea, Philippines, Madras).—PEARSON, Ceylon Administr. Report, 1915–18, p. F11.—REGAN, Ann. Durban Mus., vol. 1, 1917, p. 459 (Durban).—JORDAN and STARKS, Ann. Carnegie Mus., vol. 9, Nos. 3–4, 1917, p. 449 (Colombo, Ceylon; Philippines).—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 660 (Natal, Delagoa Bay, Mozambique, Port Amelia).

Lutjanus fulviflamma BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 65, pl. (66)344, fig. 3 (Sumatra, Nias, Singapore, Bintang, Banka, Biliton, Java, Bawean, Celebes, Sangir, Timor, Halmaheira, Ternate, Batjan, Buru, Ceram, Amboina, New Guinea).—DAY, Fishes of India, Suppl., 1888, p. 783; Fauna Brit. India, Fishes, vol. 1, 1889, p. 475.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 89 (Red Sea, Madagascar, Zanzibar, Pondicherry, Trincomale, Nias, Sumatra, Celebes, Fiji).—STEINDACHNER, Ann. Hofmus. Wien, vol. 11, 1896, p. 225 (Bangkok).—BORSIERI, Ann. Mus. Civ. Stor. Nat. Genova, vol. 41, 1904, p. 193 (Massaua).—PELLEGRIN, Bull. Soc. Zool. France, vol. 30, 1905, p. 85 (Baie d'Along, Tonkin); Bull. Mus. Hist. Nat. Paris, vol. 13, 1907, p. 204 (Madagascar).—PEARSON, Ceylon Administr. Rep., 1912–1913, p. E15 (Gulf of Manaar).—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 117 (Sanana, Sula Islands).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-phys. Klasse, vol. 26, 1913, p. 11 (Oman).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 251 (Macassar; Kawa, West Ceram; Saleyer).—PELLEGRIN, Bull. Soc. Zool. France, vol. 39, 1914, p. 224 (Nossi Bé, Diego Suarez, Fort Dauphin).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 31 (Zamboanga and Cebu).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 199 (Tahiti, Shortland Island, type of *Lutianus melanesiae*, New Guinea, Meos Bundi, Society Islands, Ebon Island); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong), p. 636 (Padang; Shortland Island).—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Lutjanus (*Mesoprion*) *fulviflamma* STEINDACHNER, Denkschr. Akad. Wiss. Wien, vol. 71, 1907, p. 128 (Scheich Othman and Kalansiye, Sokotra).

Genyoroge fulviflamma STEAD, Fishes of Australia, 1907, p. 262 (New South Wales; Queensland).

Centropomus hober LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1803, pp. 248, 256. Arabia.

Mesoprion auro-lineatus CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 496. Trinquemale, Ceylon.

Mesoprion aurolineatus DAY, Fishes of Malabar, 1865, p. 14, pl. 3; Proc. Zool. Soc. London, 1865, p. 8 (Cochin, Malabar).

Mesoprion dondiava QUOY and GAIMARD, Voy. Astrolabe, Zool., vol. 3, 1834, p. 665, pl. 5, fig. 3. Port Dorey, New Guinea; Rawak; Waigiu.

Mesoprion russellii BLEEKER, Verh. Batav. Genootsch. (Percoid.), vol. 22, 1849, p. 41 (on *Antika doondiawah* RUSSELL, Fishes of Coromandel, vol. 1, 1803, p. 76, pl. 98, Vizagapatam).

Mesoprion russelli DAY, Proc. Zool. Soc. London, 1867, p. 701 (Madras); 1870, p. 680 (Andamans).

Lutjanus russelli BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876-1877, pl. (22)300, fig. 2 (Sumatra, Nias, Pinang, Bintang, Singapore, Banka, Biliton, Java, Cocos, Bali, Celebes, Sangi, Ternate, Halmaheira, Ceram, Amboina, Goram).

Lutjanus russellii STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 236 (Tokyo).

Lutianus russellii Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 257 (Cuyo and Iloilo).—Jordan and W. F. Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 450, fig. 3 (Japan, Queensland, Cavite, Palawan, Formosa, Shanghai?).

Lutianus russeli Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. vol. 1, 1910, p. 46 (Aburatsubu).—McCulloch, Biol. Res. Endeavour, vol. 3, pt. 3, 1915, p. 142 (North Reef, Moreton Bay, Queensland, Akyab).

Lutianus russelli Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Verteb., 1920, p. 151 (Kagoshima).

Lutjanus fulviflamma var. *russellii* Day, Fishes of India, Suppl., 1888, p. 783.

Genyoroge notata (not Cuvier) Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 994 (Sea of Pinang).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 181 (copied).—Day, Proc. Zool. Soc. London, 1865, p. 8 (Cochin, Malabar); Fishes of Malabar, 1865, p. 8.—Playfair, Fishes of Zanzibar, 1866, p. 15 (Zanzibar).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Upolu).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 150 (Palaboen, Java).—Duncker, Mitth. Naturh. Mus. Hamburg, vol. 21, 1903 (1904), p. 147 (compiled).

Mesoprion naborer Thiollière, Fauna Woodlark, 1857, p. 146. Woodlark Island.

Mesoprion terubrian Thiollière, Fauna Woodlark, 1857, p. 146. Woodlark Island.

Lutianus ehrenbergii Peters, Monatsb. Akad. Wiss. Berlin, 1869, p. 704.

Lutjanus (*Mesoprion*) *ehrenbergii* Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 129 (Tamarida Brook, Sokotra).

Lutjanus (*Mesoprion*) *ehrenbergi* Zugmayer, Abhandl. K. Bayer, Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Oman).

Lutjanus ehrenbergi Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1912, No. 9, p. 116 (Batu merah, Ambon).

Diacope ehrenbergii Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 701 (Koseir, Red Sea).

Mesoprion ehrenbergi Klunzinger, Fische Roth. Meer., 1884, p. 13, pl. 2, fig. 6 (Koseir; New Ireland).

Mesoprion ehrenbergii Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Mortlock Island).—Boulenger, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).

Lutjanus oligolepis Bleeker, Verh. Akad. Wet. Amsterdam (Rev. Lutjan.), vol. 13, 1873, p. 17. Padang, Sumatra; Batavia, Java; Macassar, Celebes; Ternate; Amboina; Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 48, pl. (55)333, fig. 5 (Sumatra, Java, Celebes, Ternate, Amboina).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, 1927, p. 6 (Poeloe Toeku Island, Sumatra).

Mesoprion aureovittatus Macleay, Proc. Linn. Soc. New South Wales, vol. 4, 1879, p. 61. Solomon Islands.

Lutjanus aureovittatus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 196 (copied).

Mesoprion johni (not Bloch) Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 56 (Kagoshima).

Lutianus johni Jordan and Seale, Proc. U. S. Nat. Mus., vol. 28, 1903, p. 781 (Negros).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 79 (Jolo, Bulan).—Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 287 (Fiji).—Gilchrist, Trans. Roy. Soc. South Africa, vol. 10, 1921, p. 24.

Lutjanus johnii FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 228 (Natal and Delagoa Bay).

Lutianus melanesiae SEALE, Occas. Pap. Bishop Mus., vol. 4, No. 1, 1906, p. 43, fig. 5 (No. 1187). Shortland Island, Solomons.

Lutianus nishikawae SMITH and POPE, Proc. U. S. Nat. Mus., vol. 31, 1907, p. 474. Hamashima, Japan.

Lutianus quinquelineatus (not BLOCH) JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907, p. 258 (Manila).

Lutianus fuscescens (not VALENCIENNES) JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, 1910, p. 184. Takao, Formosa.

? *Lutianus max weberi* POPTA, Zool. Meded. Rijks. Mus. Natuurl. Hist. Leiden, vol. 6, 1921, p. 203. Kali La, Muna, in fresh water.

Depth $2\frac{3}{5}$ to $2\frac{4}{5}$; head $2\frac{3}{5}$ to $2\frac{2}{3}$, width $2\frac{1}{5}$ to $2\frac{5}{6}$. Snout 3 to $3\frac{2}{3}$ in head; eye $3\frac{2}{5}$ to $4\frac{2}{5}$, 1 to $1\frac{2}{5}$ in snout, greater than interorbital; maxillary reaches $\frac{1}{3}$ to $\frac{1}{2}$ in eye, expansion $2\frac{1}{8}$ to $2\frac{1}{2}$ in eye, length $2\frac{1}{3}$ to $2\frac{3}{5}$ in head; narrow band of fine teeth above and in front below, with outer enlarged row of conic teeth, of which large pair in front above and 2 on each mandibular ramus, 2 median laterals as canines; broad bands of villiform teeth on vomer, palatines and tongue; interorbital $6\frac{1}{4}$ to $6\frac{1}{2}$ in head, slightly convex; hind preopercle edge with minute or rudimentary points, slight emargination above angle and some better developed points below. Gill rakers 5 or 6+12 or 13, of which 3 or 4 as rudiments above and below, lanceolate, equal gill filaments or $\frac{1}{3}$ to $\frac{1}{2}$ in eye.

Scales 46 to 50 in lateral line to caudal base and 5 to 8 more on latter; 7 or 8 scales above lateral line, 14 or 15 below, 12 to 15 predorsal, 6 rows on cheek. Suprascapula entire. Scales with 13 to 15 basal radiating striæ; apical denticles 81 to 93, small, with 2 to 4 transverse series of basal elements; circuli fine.

D. X, 13, I or 14, I, fourth spine $2\frac{2}{5}$ to $2\frac{2}{3}$ in head, fourth ray $2\frac{2}{3}$ to $2\frac{4}{5}$; A. III, 8, I, third spine $3\frac{1}{8}$ to $3\frac{1}{2}$, second ray $2\frac{1}{2}$ to $2\frac{3}{5}$; caudal $1\frac{1}{4}$ to $1\frac{1}{3}$, slightly emarginate; least depth of caudal peduncle $2\frac{4}{5}$ to $3\frac{1}{8}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{3}$; ventral $1\frac{3}{5}$ to $1\frac{4}{5}$.

Back brown, sides and below whitish with silvery shades. On lateral line below soft dorsal origin large diffuse blackish blotch, usually little larger than eye. Iris yellowish brown. Vertical fins brown, paired ones paler.

Red Sea, Arabia, Zanzibar, Mozambique, Delagoa Bay, Natal, Mauritius, Rodriguez, Madagascar, Seychelles, India, Ceylon, Andamans, Siam, Singapore, East Indies, Philippines, Formosa, Tonkin, China, Japan, Queensland, New South Wales, Melanesia, Polynesia. The dark lateral blotch is very similar to that of *Lutjanus johnii*, though the species differs in that the scales above the lateral line are in oblique courses throughout, and below in horizontal series. In alcoholic examples the dark lateral blotch often shows the appearance of being ocellated or with a diffuse pale border all around, sometimes broadly so. It is, however, very variable, sometimes lozenge-shaped, though usually rounded and on the lateral line with most of its area above same. In all cases it is about the size of the eye to a half diameter larger. From this it is evident there is very little in Bleeker's figure and description of his *Lutjanus oligolepis* to warrant its retention as distinct. Likewise Peters' *Lutianus ehrenbergii*, especially as shown by Klunzinger's figure of *Mesoprion ehrenbergi*. *Antika doondiawah* Russell is also the present species, surely like Bleeker's figure of *Lutjanus russellii*. In both the predorsal scales do not extend forward of the occiput. Quoy and Gaimard's figure of *Mesoprion dondiava* shows a small specimen, though the scales above the lateral line are in series parallel with its course. It also has five longitudinal orange bands below the lateral line.

Mesoprion auro-lineatus Cuvier is noticed: Body elongate. D. X, 14. A. III, 8. Back olive gray, streaked obliquely brown. Black lateral blotch. Belly paler than back and below lateral line each side 20 very brilliant longitudinal golden lines. Dorsal and pectoral olive. Caudal and anal brilliant olive yellow. Ventral golden yellow. Length 153 mm.

Doubtless *Mesoprion aureovittatus* Macleay is a synonym, as there is nothing in his description to suggest otherwise.

18657. Alimango Bay, Burias Island. March 5, 1909. Length 213 mm.

6502. Balikias Bay, Luzon. July 17, 1908. Length 252 mm.

5485. Basud River, Luzon. June 15, 1909. Length 172 mm.

8550. Bisucay Island. April 9, 1909. Length 258 mm.

8355. Buang Bay, Talajit Island. March 15, 1909. Length 263 mm.

6312, 6313. Bugsuk, Balabac Island. January 5, 1909. Length 207 to 210 mm.

5666, 15989, 16667. Busin Harbor, Burias Island. April 23, 1908. Length 170 to 258 mm.

7108, 11053. Busin Harbor. March 8, 1909. Length 173 to 188 mm.

15890. Catbalogan, Samar. April 14, 1908. Length 153 mm.

5348. Cebu market, Cebu Island. April 4, 1908. Length 209 mm.

5844. Cotabato market. May 20, 1908. Length 338 mm.

21959 to 21961. Cuyo Island. April 9, 1909. Length 82 to 143 mm.

5259. Dagupan, Luzon. March 19, 1908. Length 158 mm.

21348, 22872. Davao, Mindanao Island. May 16, 1908. Length 128 to 130 mm.

20583, 20584. East side of Tagbilaran Channel, Bohol. April 9, 1908. Length 108 mm.

7486. Endeavor Strait, Palawan. December 22, 1908. Length 257 mm.

7550, 7565, 12484 to 12486. Endeavor Strait. December 23, 1908. Length 220 to 261 mm.

17021 to 17023. Galvaney Island, Ragay Gulf, Luzon. March 9, 1909. Length 86 to 132 mm.

A590 to A592, 7189, 7190. Gondra Island. September 20, 1909. Length 185 to 285 mm. Five golden stripes, first on first and second row below lateral line, second on fourth, third on sixth, fourth on eighth, fifth on tenth; blotch oblong, about symmetrical on lateral line or slightly more below, longer than orbit but about equal to pupil in short diameter; lower head orange; fins more pronouncedly orange, particularly spinous dorsal with distinctly orange shade at tip of membranes.

19280. Inamucan Bay, Mindanao. August 9, 1909. Length 108 mm.

5158, 17890. Jolo Reefs. March 6, 1908. Length 180 to 184 mm.

4672, 4673. Limbones Cove, Luzon. January 14, 1908. Length 230 to 244 mm.

19338, 19877. Luzon shore, San Vicente Harbor. November 13, 1908. Length 98 to 117 mm.

20388. Maculabo Island. June 14, 1909. Length 58 mm.

6451. Mahinog, Camiguin Island. August 3, 1909. Length 169 mm.

8511. Makesi Island, Palawan. April 5, 1909. Length 275 mm.

35, 6201. Malapascua Island. March 16, 1909. Length 192 to 238 mm.

9076. Malhon Island. July 27, 1909. Length 236 mm.

11774, 11782. Mansalay, Mindoro. June 4, 1908. Length 158 to 163 mm.

Two examples [1100]. Mariveles Group. January 30, 1909. Length 120 to 190 mm. General shades less orange; chin, breast and belly white; lower side from maxillary through to lower peduncle washed with orange shades; lateral blotch very distinct, larger than eye; dorsal and caudal hyaline purplish; tips of spinous membranes of dorsal blackish, front margin of soft portion whitish; caudal not marked; anal bright lemon yellow; ventrals similar but paler; caudal rays dusky, membranes with a very pale hyaline reddish shade; somewhat yellow in axil, upper base black.

8585, 8593. Matnog Bay. May 31, 1909. Length 258 to 272 mm.

9358. Murcielagos Bay, Mindanao. August 21, 1909. Length 250 mm.

20354. Nasugbu, Luzon. January 16, 1908. Length 88 mm.

21989. Near mouth of Tabayas River, Luzon. February 5, 1909. Length 130 mm.

15677. Near Palag Bay, Luzon. June 16, 1909. Length 198 mm.

22409. Nogas Point, Panay. February 4, 1908. Length 64 mm.

13870. Observatory Island, Linapacan Strait. December 19, 1908. Length 159 mm.

9187, 9218 to 9222. Opol, Mindanao. August 4, 1909. Length 232 to 255 mm.

A589. Panpan Point, Tara Island. September 20, 1909. Length 267 mm. Four golden stripes below lateral line, first on third row of scales, second on fifth, third on seventh and eighth, fourth on tenth; black spot almost round, much larger than eye and mainly above lateral line; anal orange.

12058, 13848. Port Banalacan, Marinduque. February 23, 1909. Length 180 mm.

8182. Port Busin, Burias Island. March 8, 1909. Length 255 mm.

6508, 11254. Port Caltom, Busuanga Island. December 15, 1908. Length 205 to 230 mm.

7712 to 7717, 10740, 10741, 14946. Port Ciego, Balabac Island. January 3, 1909. Length 160 to 233 mm.

6177. Port San Pio Quinto. November 11, 1908. Length 198 mm.

19812. Port San Vicente, Luzon. November 18, 1908. Length 117 mm.

5544, 6697. Rasa, Mantaquin Bay, Palawan. April 1, 1909. Length 148 to 205 mm.

22035, 22036, 22327. River at Pasacao, Luzon. March 9, 1909. Length 84 to 152 mm.

7394, 9371 to 9373. Romblon Harbor. March 25, 1908. Length 156 to 188 mm.

20754. Sablayan, Mindoro. December 13, 1908. Length 93 mm.

8256. Saboon Island, Ragay Gulf, Luzon. March 10, 1908. Length 255 mm.

17591. San Miguel Island, Tabaco Bay. June 7, 1909. Length 208 mm.

22385. San Miguel Island. June 14, 1909. Length 120 mm.

19686. Santa Cruz Island, Marinduque. April 29, 1908. Length 148 mm.

9545, 12618, 21666. Santiago River, Pagapas Bay, Luzon. February 20, 1909. Length 122 to 183 mm.

5861. Shore below mouth of Mindanao River. May 20, 1908. Length 212 mm.

19425. Sorsogon market. March 12, 1909. Length 108 mm.

13869, 15195. Taganak Island. January 7, 1909. Length 180 to 202 mm.

6837. Tataan, Tawi Tawi Group. February 19, 1908. Length 200 mm.

4844, 7477. Tataan, Tawi Tawi Group. February 20, 1908. Length 150 to 293 mm.

20115, 20117. Ulugan Bay near Baheli River mouth, Palawan. December 28, 1908. Length 74 to 77 mm.

6628, 6630, 6669. Varadero Bay, Mindoro. July 23, 1908. Length 228 to 255 mm.

17274. Verde del Sur Island, Palawan. April 7, 1909. Length 148 mm.

7126, 7127. West side of Palaui Island. November 18, 1908. Length 223 to 238 mm.

5117. Sandakan, Borneo. January 4, 1908. Length 220 mm.

5060. Sandakan. February 29, 1908. Length 177 mm.

5076. Sandakan. March 1, 1908. Length 180 mm.

5086, 19985. Sandakan. March 2, 1908. Length 101 to 231 mm.

5115, 5116. Sandakan. March 4, 1908. Length 183 mm.

13592. Tana Keke Island, Flores Sea. December 21, 1909. Length 168 mm.

A1490, A1491, A1495, 11045. Kait Point, Libani Bay, Celebes. December 29, 1909. Length 195 to 229 mm. [A1490]. Bright orange yellow stripes below lateral line; first on second row of scales below lateral line row; second and third on alternate rows below; fourth separated by two rows from the third. [A1491]. Five orange yellow stripes below lateral line, first on first row below, others on alternate rows below; second stripe running forward nearly to edge of preopercle; oblique rows above lateral line with obscure brownish stripes.

A1125, A1126. Powati anchorage, Makyan Island. November 29, 1909. Length 252 to 290 mm. Very dark olive above; naked top of head and anterior back nearly greenish black; lower side silvery flushed with rose showing four distinct yellow stripes, first on second row below lateral line, others on alternate rows below; lower head silvery with dusky crimson wash; dorsals olive; terminal third of soft part hyaline; caudal olive yellow; anal cadmium; ventrals hyaline, with dash of yellow; pectorals dusky hyaline, ochry in axil; iris golden.

14137. Tifu Bay, Bouro. December 10, 1909. Length 134 mm.

A837 to A839. Talisse Island. November 9, 1909. Length 222 to 271 mm.

7513. Hong Kong market, China. August 13, 1908. Length 220 mm.

6319, 9962. Kowloon market, China. September 18, 1908. Length 141 to 183 mm.

A1562, A1563. Nan Wan, Formosa. January 25, 1910. Length 254 to 265 mm.

The following specimens all with dark streak horizontally through eye (not general series in United States National Museum).

21857, 21858. Canmahala Bay. March 11, 1909. Length 73 to 81 mm.

20582. East side Tagbilaran Channel, Bohol. April 9, 1908. Length 29 mm.

20513. Guijulugan, Negros. April 2, 1908. Length 48 mm.

19321, 19322. Jolo. March 6, 1908. Length 42 to 46 mm.

14968. Refugio Island, Pasacao, Luzon. March 9, 1909. Length 64 mm.

21915. Sirinao Island. December 31, 1908. Length 79 mm.

30537 U.S.N.M. New Guinea. Australian Museum. Length 253 mm.

30642 U.S.N.M. New Guinea. Australian Museum. Length 228 mm.

42007 U.S.N.M. Bellenger River, New South Wales. Australian Museum. Length 227 mm.

42008 U.S.N.M. Queensland. Australian Museum. Length 208 mm. As *Lutianus johni.*

51976 U.S.N.M. Negros, Philippines. Dr. B. Dean. Length 158 mm. As *Lutianus johni.*

56185 U.S.N.M. Bulan. Bureau of Fisheries (3539). Length 139 mm. As *Lutianus johnii.*

56185 U.S.N.M. Mindanao. Bureau of Fisheries (3459). Length 178 mm.

56186 U.S.N.M. Bacon. Bureau of Fisheries (4168). Length 265 mm.

56252 U.S.N.M. Jolo. Bureau of Fisheries (4041). Length 210 mm. As *Lutianus johnii.*

57978 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 149 to 188 mm. 6 examples.

65935 U.S.N.M. Suva, Fiji. *Albatross* Collection. Length 145 mm. As *Lutianus johnii.*

72245 U.S.N.M. Iloilo. R. C. McGregor. Length 105 mm. As *Lutjanus russelli.*

72677 U.S.N.M. Java. Bryant and Palmer. Length 177 mm. As *Lutjanus russelli.*

72678 U.S.N.M. Java. Bryant and Palmer. Length 288 mm.

75511 U.S.N.M. Probably Shanghai, China. P. L. Jouy. Length 219 mm. As *Lutianus russelli.*

75512 U.S.N.M. Wakanoura, Japan. P. L. Jouy. Length 264? mm. As *Lutianus russelli.*

84173 U.S.N.M. Cebu. Dr. F. Baker. Length 134 mm.

84174 U.S.N.M. Cebu. Dr. F. Baker. Length 126 mm.

84244 U.S.N.M. Zamboanga. Dr. F. Baker. Length 148 to 156 mm. 2 examples.

27588. A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 203 mm. When fresh in arrack olive brown above, below pale rosy orange. Sides with 8 narrow longitudinal dark olivaceous bands, becoming golden below, above lateral line continued obliquely up to dorsal bases. Blackish blotch size of eye below last dorsal spine and front rays of soft dorsal. Sides also marked with narrow, pale lines parallel with darker ones. Peritoneum silvery. Dorsal and caudal grayish, former with broad dark gray marginal band. Anal and paired fins mostly pale yellowish. As *Lutianus russellii.*

LUTJANUS LEMNISCATUS (Valenciennes)

Serranus lemniscatus Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 240. Ceylon.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 155 (copied).

Lutianus lemniscatus Day, Fishes of India, vol. 1, 1875, p. 36 (type).

Lutjanus lemniscatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 67 (Obi); vol. 8, 1876–1877, pl. (7) 285, fig. 2.—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 470.

Lutjanus melanotaenia Bleeker, Nederland. Tijdschr. Dierk., vol. 1, 1863, p. 244. Obi.

Depth 2¾; head 2½. Snout 2⅘ in head from snout tip; eye 4, 1¼ in snout; maxillary reaches opposite ⅕ in eye, expansion 1¾ in eye, length 2¼ in head from snout tip; outer row of teeth little enlarged and canines at front of jaws; band of fine teeth form obtuse angle on vomer and narrow band on each palatine, tongue toothless; interorbital hardly elevated; hind preopercle edge denticulate.

Scales 65? along and above lateral line, 55? along and below lateral line; 8 scales above lateral line to median dorsal spines, 25? below to vent.

D. X, 13, fifth spine 2⅗ in total head length, fifth ray 2⅛; A. III, 10 (8 or 9 in description), second spine 2⅔, first ray 2⅗; caudal 1⅗, truncate; least depth of caudal peduncle 3; pectoral 1⅔; ventral 1⅗.

Back olive, below pale bluish. Black band from middle of snout, through eye where wide as pupil, expanding on side of body nearly wide as eye and narrowing on caudal peduncle out over middle of caudal. Second blackish band from maxillary crosses below pectoral base back to lower surface of caudal peduncle. Fins yellowish. Length 74 mm. (Bleeker.)

Ceylon, East Indies. The type, described by Day, was 103 mm. long. The species is well characterized by its two black longitudinal bands, one axial and the other inferior.

Subgenus LUTJANUS Bloch

Preopercle without or only slight notch above angle and interopercle spine feeble or absent. Scales above lateral line in oblique or partly oblique rows. Predorsal scales forward into interorbital.

LUTJANUS BIGUTTATUS (Valenciennes)

Serranus biguttatus VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 507. Trinquemale, Ceylon; Amboina.—GÜNTHER, Cat. Fish Brit. Mus., vol. 1, 1859, p. 155 (compiled).

Lutianus biguttatus DAY, Fishes of India, pt. 1, 1875, p. 34, pl. 10, fig. 6 (type).—FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 524 (Padang).

Lutjanus biguttatus DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 469.—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 54, pl. (60) 338, fig. 5 (Sumatra, Nias, Java, Bali, Celebes, Sumbawa, Halmaheira, Ternate, Batjan, Amboina).—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 116 (Majalibit Bay, Waigiu; Batumerah, Amboina).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 248 (Labuan Tring, Lombok; Makassar).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 197 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Padang).

Mesoprion lineolatus (not RÜPPELL) BLEEKER, Verh. Batav. Genootsch. (Perc.), vol. 22, 1849, p. 46 (Batavia).

Mesoprion elongatus HOMBRON and JACQUINOT, Voy. Astrolabe et Zélée, Zool. 3, Poiss., 1853, p. 38, pl. 2, fig. 3. No locality.

Mesoprion bleekeri GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 208. Amboyna.—DAY, Proc. Zool. Soc. London, 1870, p. 680 (Andamans).—SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 38 (Samoa); No. 8, 1881, p. 5 (Samoa).—PÖHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Samoa).

Depth 3⅕ to 3½; head 2½ to 2⅘, width 2⅕ to 2⅗. Snout 3⅛ to 3⅔ in head from snout tip; eye 3 to 4¼, 1 to 1⅖ in snout, greater than interorbital in young to equal with age; maxillary reaches ¼ to

⅖ in eye, expansion 1⅘ to 2⅖ in eye, length 2⅓ to 2⅖ in head from snout tip; band of villiform teeth in each jaw, outer row enlarged, with pair of canines in front of each; band of villiform teeth on vomer and palatines; interorbital 3⅘ to 4½, flattened; preopercle edge little undulated, finely serrated, except slightly larger serrae at corners and no bony subopercular knob. Gill rakers 8+18, about 2 in eye, 3 above and 2 below rudimentary.

Scales 48 or 49 in lateral line to caudal base with 5 more on latter; 6 scales above lateral line, 13 below, 13 predorsal forward to occiput and 8 more till opposite eye center, 6 rows on cheek. Scales with 9 basal radiating striae; apical denticles 70, with 3 transverse series of basal elements; circuli fine.

D. XI, 12 ɪ, fourth spine 2¼ to 2½ in total head length, eleventh spine 4¼ to 4⅖, first ray 3 to 3¼; A. III, 8, ɪ, second spine 3¼ to 3⅔, first ray 2⅔ to 3; caudal 1⅖ to 1½, little emarginate; least depth of caudal peduncle 3¼ to 3⅖; pectoral 1⅖ to 1¾; ventral 1⅔ to 1¾.

Back olive, below whitish, colors contrasted by deep brown longitudinal band from snout tip, through eye and out over supero median caudal rays. On back above lateral line, white spot smaller than pupil, below middle of spinous dorsal and another below middle of soft dorsal. Fins all pale brown. Deep brown spot in pectoral axil, shows as small spot at pectoral origin.

Ceylon, India, Andamans, East Indies, Philippines. Known by its small size. Bleeker's series of 37 examples were 101 to 206 mm. He says *Mesoprion elongatus* Hombron and Jacquinot is similar in most every way, except it does not show the two white spots on each side of the back. D. XI, 12; A. III, 7. Clear brown on back, below silvery white. Fins brownish. Length 190 mm.

Mesoprion bleekeri Günther is also described without mention of the two white spots on each side of the back.

In the series below a number have the lower surface of the head dark brown and an indefinite dark brown band may extend backward from each side of the breast, fading out behind, though sometimes even reaching the caudal peduncle. The two white spots on the back, each side above, are constantly present though they may vary a little in position, also the anterior may often be variably similar. Frequently a fifth white spot may also be present on the upper surface of the caudal peduncle. The white spots are also present in the young, but less distinct or more or less gray.

9010. Busin Harbor, Burias Island. April 22, 1908. Length 197 mm.

9217. Camp Overton, Mindanao. August 6, 1909. Length 176 mm.

17424. Candaraman Island, North Balabac Strait. January 4, 1909. Length 203 mm.

16662. Canimo Island, near Daet. June 15, 1909. Length 164 mm.

10610, 19855. Cataingan Bay, Masbate. April 18, 1908. Length 113 to 125 mm.

20575, 20576. Catbalogan, Samar. April 15, 1908. Length 130 to 133 mm.

6704, 6707 to 6710, 6931, 21222. Catbalogan. April 16, 1908. Length 82 to 186 mm.

16305. Endeavor Strait, North West coast of Palawan. December 23, 1908. Length 190 mm.

6354, 6355, 7143, 11085, 11086. Inamucan Bay, Mindanao. August 8, 1909. Length 175 to 212 mm.

21169. Malcochin Harbor, Linapacan Island. December, 1908. Length 85 mm.

12341, 12342, 16406, 16407, 19619, 19623. Mansalay, Mindoro. June 4, 1908. Length 91 to 182 mm.

16622, 16623. Maribojac Bay, Bohol. March 26, 1909. Length 145 to 156 mm.

14235. Mariveles wharf. January 30, 1909. Length 80 mm.

11813. Matnog Bay. May 31, 1909. Length 160 mm.

16983, 16998, 17641. Mompog Island. March 3, 1909. Length 167 to 193 mm.

18820. Pandanon Island. March 23, 1909. Length 198 mm.

19484. Pangauran River, Port Caltom, Busuanga Island. December 16, 1908. Length 64 mm.

5908, 10632, 13131. Polloc, Mindanao. May 22, 1908. Length 148 to 185 mm.

6503, 6505 to 6507, 14712. Port Caltom. December 15, 1908. Length 134 to 196 mm.

5545. Rasa Island, Mantaquin Bay, Palawan. April 1, 1909. Length 213 mm.

8277. San Miguel Island, Tabaco Bay. June 4, 1909. Length 160 mm.

6699. Singaan Island, north of Tawi. September 21, 1909. Length 198 mm.

19424. Sorsogon market. March 12, 1909. Length 128 mm.

Four examples [144]. Tataan, Simaluc Island. February 18, 1908. Length 133 to 170 mm.

18404 to 18406. Tataan. February 20, 1908. Length 119 to 168 mm.

9150, 19041, 19042. Varadero Bay, Mindoro. July 23, 1908. Length 153 to 164 mm.

A1158, 13264 to 13270. Gane Road, Gillolo Island, Dutch East Indies. December 1, 1909. Length 240 to 212 mm.

5360. Bumbum Island. September 25, 1909. Length 169 mm.

9987. Maitara Island. November 26, 1909. Length 220 mm.

32728 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 173 mm.

27610 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 162 mm. When fresh in arrack dull gray above, sharply defined by dusky longitudinal band extending from snout to caudal base. Below brownish white, with faint dusky longitudinal band below pectoral. Oblique streaks of dark gray up to upper profile whole course of lateral line. Two white spots, with dusky edges, on upper back near middle of each dorsal. Fins pale brown. Pectoral axil and outer bases of upper rays blackish brown. Iris yellowish.

LUTJANUS VITTA (Quoy and Gaimard)

Serranus vitta Quoy and Gaimard, Voy. Uranie, Zool., December 18, 1824, pl. 58, fig. 3. Waigiu.—Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 239 (Waigiu); vol. 6, 1830, p. 505 (Tahiti; Waigiu).—Richardson, Ichth. China Japan, 1846, p. 234 (Hong Kong).

Diacope vitta Schlegel, Fauna Japonica, Poiss, pt. 1, 1842, p. 13, pl. 6, fig. 4 (Nagasaki).

Mesoprion vitta Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 207 (China, Hong Kong, Amboina, Moluccas, Louisiades, Port Essington).—Kner, Reise Novara, Fische, 1865, p. 37 (Java).—Playfair, Fishes of Zanzibar, 1866, p. 18 (Seychelles); Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).—

Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Nagasaki Bay).—Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 55 (Hong Kong).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Singapore).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 467 (Luzon, Cavite, Santa Cruz).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 56.

Lutianus vitta Day, Fishes of India, pt. 1, 1875, p. 46, pl. 14, fig. 2.—Rutter, Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 74 (Swatow, China).—Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 76 (Yokohama).—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 524 (Padang).—Jordan and Seale, Proc. Davenport Acad. Sci., vol. 10, 1905, p. 10 (Hong Kong); Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 20 (Cavite).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 81 (Bacon, Bulan, Zamboanga).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—Seale, Philippine Journ. Sci., vol. 5, No. 4, Oct. 1910, p. 275 (Sandakan, Borneo).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 448, fig. 2 (Wakanoura, Nagasaki, Kobe).—Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 499 (Okinawa).—Pearson, Ceylon Administr. Report, 1915–18, pp. F11, F17.—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 449 (Ceylon).—Fowler, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., 1920, p. 151 (Takamatsu).—Malpas, Ceylon Administr. Report, 1921, p. E5.

Lutjanus vitta Bleeker, Atlas Ichth. Néerland., vol. 8, 1876–1877, p. 51, pl. (62)340, fig. 5 (Sumatra, Singapore, Banka, Biliton, Java, Bali, Celebes, Ternate, Amboina, Ceram, Waigiu, Rawak, New Guinea).—Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 236 (Tokyo).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 480.—Pellegrin, Bull. Soc. Zool. France, vol. 30, 1905, p. 85 (Baie d'Along, Tonkin).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 248 (Saleyer).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 30 (Cebu; Takao).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 277 (Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 196 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong), p. 635 (Padang).

Mesoprion enneacanthus Bleeker, Verh. Batav. Genootsch. (Perc.), vol. 22, 1849, p. 40. Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 209 (copied).—Kner, Reise Novara, Fische, 1865, p. 33 (Java).

Mesoprion phaiotaeniatus Bleeker, Verh. Batav. Genootsch. (Percoid.), vol. 22, 1849, p. 43. Batavia.—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1879, p. 56 (Tokyo).

Mesoprion ophuyseni Bleeker, Act. Soc. Sci. Ind. Néerland. (Achst. Bijd. Sumatra), vol. 8, 1857, p. 74. Sumatra.

Depth 2⅔ to 2⅘; head 2½ to 2⅘, width 2⅛ to 2¾. Snout 2⅞ to 3⅖ in head from snout tip; eye 3¾ to 4⅘, 1⅓ to 1⅔ in snout, greater than interorbital in young to equal with age; maxillary reaches ¼ to ⅓ in eye, expansion 1½ to 2¼ in eye, length 2⅓ to 2½ in head from snout tip; teeth in villiform bands in jaws, outer row enlarged; 4 large front canines in each jaw; bands of fine teeth on vomer and palatines; interorbital 4¼ to 5⅕, slightly convex; preopercle edge nearly straight, slight notch below, above finely serrated and below with coarse serrations. Gill rakers 6+12, more than ½ of eye of which 4 above and 3 below rudimentary.

Scales 47 to 50 in lateral line to caudal base and 10 more on latter; 8 scales above lateral line, 16 below, 21 to 24 predorsal forward opposite eye center of which 14 or 15 to occiput, 9 rows on cheek of which 2 on preopercle flange. Scales in oblique rows above lateral line, horizontal rows below. Tubes in lateral line sometimes trifid. Scales with 8 to 11 basal radiating striae; apical denticles 74 to 89, very small, with 7 or 8 transverse series of basal elements; circuli fine.

Dull brown on back, each row of scales above lateral line with slightly darker median streak or very narrow band. Brown band from side of snout end, through eye, not wider than pupil and back to base of upper caudal lobe. Under surface of body silvery white. Eye yellowish. Fins all pale brownish to whitish.

Seychelles, Ceylon, Singapore, East Indies, Philippines, Tonkin, China, Formosa, Riu Kiu, Japan, Queensland, Melanesia, Polynesia. A slender species, with general rosy coloration and a dark lateral band at all ages. Bleeker gives 262 mm. as the maximum for 22 examples. Day says the dark lateral band is not always present, though such specimens have the olive stripe on the upper third of the body nearly black.

Bleeker has described *Mesoprion ophuyseni* which is evidently a variant in which the dark lateral band is swollen as a slightly larger blackish blotch opposite the vent. This dark lateral band may or may not be continuous behind the blotch to the caudal.

10963, 10964. Cataingan Bay, Dumurug Point, Masbate. April 19, 1908. Length 165 to 193 mm.

9117, 13013. Catbalogan, Samar. April 15, 1908. Length 127 to 139 mm.

6705, 6706, Catbalogan. April 16, 1908. Length 101 to 124 mm.

2135 [D.5492]. Diuata Point (W.), S. 45° W., 15.2 miles (9° 12′ 45″ N., 125° 20′ E.), between Leyte and Mindanao. August 1, 1909. Length 94 mm.

18669 [1786]. Hinunangan Bay, Leyte. July 30, 1909. Length 108 mm.

4864. Jolo market. February 13, 1908. Length 357 mm.

16187. Jolo market. March 6-7, 1908. Length 183 mm.

5199. Manila market. June 11, 1908. Length 270 mm.

12029 to 12034. Nabatas Point, Samar. July 24, 1909. Length 139 to 181 mm.

18646 [1296]. Saboon Island, Ragay Gulf, Luzon. March 10, 1909. Length 174 mm. Golden yellow; brown stripe from snout through eye straight backward across lateral line to upper base of caudal; rows of scales above lateral line with stripe through center, forming oblique stripes on body; similarly below lateral line but much paler, completely fading when the fish bleaches; lower head, breast, and belly much paler; dorsal body color, incised tips opaque white, which continues as marginal line on anterior portion of soft dorsal. Just below fin more deeply orange, front of anal white; caudal orange; ventrals very pale; pectorals pale yellow, darker above.

18400, 18401. Tataan, Tawi Tawi Group. February 20, 1908. Length 167 to 174 mm.

5992. Zamboanga market. May 26, 1908. Length 278 mm. Reddish shades above, white below. Above brown line brownish anteriorly, yellow posteriorly, narrow oblique bronze lines on most of scales above. Paler horizontal stripes below. Dorsal orange terminally, spine tips white, anteriorly many of soft dorsal rays white, fin generally yellow. Caudal yellow, tipped white. Pectoral pale yellow. Ventral pale, front and tip white.

6017. Zamboanga market. May 27, 1908. Length 370 mm. Reddish above, white below. Brown lateral band from eye to caudal peduncle. Yellow oblique stripes above lateral line. Vertical fins yellow; tips of dorsal spines and upper edge of soft fin white; first 4 anal rays with white edge. Pectoral yellow, clear below, axil very slightly dusky. Ventral with pale tint.

9389. Zamboanga market. September 7, 1909. Length 357 mm.

6810. Knowloon market, China. September 19, 1909. Length 213 mm.

56040 U.S.N.M. Bacon, Philippines. Bureau of Fisheries (3785). Length 219 mm. As *Lutianus furvicaudatus* (not Fowler) Evermann and Seale, Bull. Bur. Fisher., vol. 76, 1906 (1907), p. 80. Caudal base and adjacent region of caudal peduncle evidently stained dusky. Evermann and Seale say "we have examined Mr. Fowler's type" but surely could not have remembered much to have placed this specimen with it!

56127 U.S.N.M. Bacon. Bureau of Fisheries (3718). Length 147 mm.

56335. U.S.N.M. Cavite. Dr. G. A. Lung. Length 67 to 254 mm. 4 examples.

28025 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 255 mm.

71966 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection 1906. Length 78 to 185 mm. 5 examples. These with large black blotch on lateral line size of eye, as in *Lutjanus fulviflamma*, also dark band through eye.

72679 U.S.N.M. Java. Bryant and Palmer. Length 173 mm.

75509 U.S.N.M. Wakanoura, Japan. Jordan and Snyder. Length 181 mm.

75510 U.S.N.M. Nagasaki. Jordan and Snyder. Length 125 to 155 mm. 4 examples.

76621 U.S.N.M. Takao, Formosa. Dr. F. Baker. Length 295 mm.

84196 U.S.N.M. Cebu, Philippines. Dr. F. Baker. Length 223 mm.

47640 A.N.S.P. Philippines. Commercial Museum, Philadelphia. Length 222 mm.

27579 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 223 mm. When fresh in arrack mostly pale pink, on back behind and caudal peduncle. Dark or olive band, narrower than eye, from snout where hardly defined, back across opercle, side of trunk and on caudal peduncle above becoming merged in general tint of same region. Scales above lateral line with narrow, oblique pale greenish lines to dorsal base. Similar narrow longitudinal streaks, though paler, along side and lower surface of body below lateral line from head to caudal. Cheek rosy. Belly and lower surface of head whitish. Top of head and side above pale orange. Fins mostly deep sulphur yellow.

LUTJANUS CHRYSOTAENIA (Bleeker)

Mesoprion chrysotaenia Bleeker, Nat. Tijds. Nederland. Indië, vol. 2, 1851, p. 170. Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 192 (Batavia).—Kner, Reise Novara, Fische, 1865, p. 34 (Singapore; Madras).—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Bangkok; Singapore).—Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 38 (Somerset, Cape York).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Singapore).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (Macassar, south Celebes).

Mesoprion chrysotenia Kent, Great Barrier Reef, 1893, p. 370 (Queensland).

Lutianus chrysotaenia Day, Fishes of India, pt. 1, 1875, p. 36, pl. 11, fig. 3 (Amboina; Nicobars), p. 41 (in footnote on Günther's record).—Weber, Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 263 (Thursday Island).—McCulloch, Biol. Res. Endeavor. vol. 3, pt. 3, 1915, p. 141 (North Reef. Masthead Island, Broome).

Lutjanus chrysotaenia Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (24) 302, fig. 4; vol. 8, 1876–1877, p. 50 (Sumatra, Nias, Singapore, Bintang, Banka, Biliton, Java, Bali, Celebes, Timor, Batjan, Obi, Amboina).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 470.—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 247 (Macassar; Buka Bay, Rotti).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 196 (compiled).

Mesoprion quinquelineatus (not Bloch) Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 209 (no locality).

Lutianus quinquelineatus Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 258 (Manila; Aparri).

Lutianus russelli (not Bleeker) Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 20 (Cavite).

Lutianus orientalis Seale, Philippine Journ. Sci., vol. 4, No. 6, Nov. 1909, p. 513. Limbones Cove, Luzon; Balabac Island.

Depth 2⅖ to 2½; head 2⅖ to 2⅔, width 2¼ to 2½. Snout 2⅔ to 3 in head; eye 4 to 5, 1⅓ to 1½ in snout, little greater than interorbital in young to equal to interorbital with age; maxillary reaches ⅖ to ½ in eye, expansion 1⅗ to 2 in eye, length 2⅕ to 2⅓ in head; teeth in narrow villiform bands in jaws, with outer row of enlarged conic teeth, as large pair of wide set canines above and 2 or 3 on each mandibular ramus; band of fine villiform teeth on vomer, palatines and tongue, on first in broadly crescentic patch with median backward projection; interorbital 4⅗ to 5, broadly convex; preopercle edge with obsolete or feeble denticles and broad shallow emargination below. Gill rakers 6+13, of which 5 as rudiments both above and below, longest greater than gill filaments or 1 to 1⅘ in eye.

Scales 48 or 49 in lateral line to caudal base and 5 to 7 more on latter; 11 or 12 scales above lateral line, 17 or 18 below, 17 predorsal scales to occiput and 14 to 16 forward opposite front pupil edge; cheek scales as 6+9+2 or 3, first as suborbital patch, then broad scaly area to preopercle ridge and others on preopercle flange. Suprescapula entire. Scales with 10 to 18 basal radiating striae; apical denticles 60 to 83, small, with 5 to 10 transverse series of basal elements; circuli very fine.

D. X, 15, i or 14, i, fourth spine 3 to 3⅖ in head, fourth ray 3 to 3½; A. III, 9, i or 10, i, third spine 3⅔ to 4½, second ray 2⅗ to 2⅘; caudal 1⅕ to 1½, moderately emarginate; least depth of caudal peduncle 2⅛ to 3; pectoral 1⅕ to 1⅖; ventral 1⅘ to 1⅞.

Olive brown generally, paler to whitish below. Two dark longitudinal bands, narrow at first and gradually broadening behind, extend from upper hind eye edge to base of soft dorsal; third band broader, from hind eye edge, largely axial and back toward base of upper caudal lobe. Fins all pale brown. Peitoral axil above with neutral dusky to blackish blotch quite dusky at fin origin externally as triangular blotch. Iris yellowish brown.

India, Nicobars, Siam, Singapore, East Indies, Philippines, Queensland. A handsome species known by its numerous golden longitudinal bands, and a dark blotch at the pectoral base above. In alcohol this fades to a pattern as described above and as so well figured by Day who also mentions a young example 102 mm. long in the British Museum at that time. It had a black blotch on the lateral line from the twenty-second to the thirty-second scale. This is surely the same as the nominal *Lutianus orientalis* described from an example but 95 mm. Bleeker had five examples, his largest 305 mm.

7468, 12404 to 12406. Bolalo Bay, Palawan. December 21, 1908. Length 123 to 288 mm.

8356. Buang Bay, Talajit Island. March 15, 1909. Length 260 mm.

9355. Bugsuk Island, Balabac. January 5, 1909. Length 210 mm.

8729. Caracaran, Batan Island. June 28, 1909. Length 336 mm.

6818. Catbalogan, Samar. April 14, 1908. Length 159 mm.

13011, 13012, 5512. Catbalogan. April 15, 1908. Length 163 to 357 mm.

6932. Catbalogan. April 16, 1908. Length 182 mm.

7516. Chase Head near village, Endeavor Strait, Palawan. December 22, 1908. Length 260 mm.

5261. Dagupan, Luzon. March 19, 1908. Length 118 mm.

18832. Endeavor Strait, Palawan. December 22, 1908. Length 172 mm.

8238. Galvaney Island, Ragay Gulf, Luzon. March 9, 1909. Length 292 mm.

20424. Malampaya River, Palawan. December 26, 1908. Length 92 mm.

7420. Malcochin Harbor, Linapacan Island. December 19, 1908. Length 355 mm.

22340. Malinao River, Mantaquin Bay, Palawan. April 2, 1909. Length 69 mm.

9034. Nabatas Point, Samar. July 24, 1909. Length 250 mm.

12754, 20661. North end Endeavor Strait, Northwest coast of Palawan. December 22, 1908. Length 103 to 151 mm.

22620. Paluan River, Mindoro. December 11, 1908. Length 63 mm.

19483. Pangauran River, Port Caltom, Busuanga Island. December 16, 1908. Length 72 mm.

8176. Port Busin, Burias Island. March 7, 1909. Length 310 mm.

11255. Port Caltom, Busuanga Island. December 15, 1908. Length 205 mm.

7720, 7764. Port Ciego, Balabac. January 3, 1909. Length 170 to 242 mm.

8774. Quinalasag Island. June 12, 1909. Length 300 mm.

11178. Rasa Island, Mantaquin Bay, Palawan. April 1, 1909. Length 220 mm.

22295. River at Port Dupon, Leyte. March 17, 1909. Length 116 mm.

12619. Santiago River, Pagapas Bay, Luzon. February 20, 1909. Length 124 mm.

8331. Subig Bay, Subig. January 7, 1908. Length 88 mm.

7338. Tara Island. December 14, 1908. Length 238 mm.

4924, 4925. Tataan, Simulac Island, Tawi Tawi Group. February 20, 1908. Length 227 to 248 mm.

A571. Tutu Bay, Jolo. September 19, 1909. Length 334 mm.

20689. Ulugan Bay, near Baheli River mouth, Palawan. December 28, 1908. Length 81 mm.

19345. Sandakan Bay, Borneo. March 2, 1908. Length 45 mm.

21319. Uki, Bouro Island. December 9, 1909. Length 105 mm.
13899, 13286, 13287. Great Tobea Island, Buton Strait. December 14, 1909. Length 159 to 213 mm.
Two examples. U.S.N.M. Cavite. Dr. G. A. Lung. Length 76 mm. As *Lutianus russelli.*

LUTJANUS CARPONOTATUS (Richardson)

Mesoprion carponotatus RICHARDSON, Ann. Mag. Nat. Hist., vol. 9, 1842, p. 28. Port Essington.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 190 (Port Essington).—KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 342 (Port Denison).—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 328 (Northwest coast Australia).—KENT, Great Barrier Reef, 1893, p. 370 (Queensland).

Mesoprion carponotus SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Kandavu, Fiji).

Lutjanus carponotatus FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 196 (compiled).

Depth 3⅔ in total; head 3⅔. Eye 4⅓ in head. Preopercle slightly emarginate, with few scarcely visible denticulations. Opercle rounded. Scales 68 in lateral line. Suprascapula entire. D. X, 15, fourth spine longest; A. III, 10, second and third spines nearly equal; caudal truncate; pectoral not reaching vent. Uniform, with black spot at pectoral root. (Günther.)

Northwest coast of Australia, Queensland, Fiji. According to Richardson the predorsal scales extend forward opposite center of eye.

LUTJANUS LINEOLATUS (Rüppell)

Diacope lineolata RÜPPELL, Atlas Reise Nördl. Afrika, Fische, 1828, p. 76, pl. 19, fig. 3. Massaua.—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 698 (Koseir, Red Sea).

Mesoprion lineolatus GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 125 (Red Sea; Amboina).—KNER, Reise Novara, Fische, 1865, p. 36 (Java).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 17 (Zanzibar).—KLUNZINGER, Fische Roth. Meer., 1884, p. 14.—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (North Celebes).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).

Lutianus lineolatus DAY, Fishes of India, pt. 1, 1875, p. 35, pl. 11, figs. 1–2 (type of *Serranus noulcny;* Madras).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 81 (Bacon; Bulan).—PEARSON, Ceylon Administr. Report, 1915–18, pp. F10–F13, F15–F18).—JORDAN and STARKS, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 449 (Ceylon).—FOWLER, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).—MALPAS, Ceylon Administr. Report, 1921, pp. E5–E7.

Lutjanus lineolatus DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 469.—PELLEGRIN, Annuario Mus. Zool. R. Universit. Napoli, n. s., vol. 3, July 11, 1912, p. 5 (Red Sea).—PEARSON, Ceylon Administr. Rep., 1912–1913, pt. 4, p. E14 (Gulf of Manaar); 1914, pt. 4, p. E5.—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 248 (Kawa, West Ceram; Ambon).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 277 (Orion; type of *Rhomboplitoides megalops*).

Lutijanus (*Mesoprion*) *lineolatus* ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).

Serranus nouleny VALENCIENNES, Hist. Nat. Poiss., vol. 2, 1928, p. 247. Coromandel.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 126 (compiled).

Lutianus nouleny FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 14, 1904, p. 524 (Padang).

Mesoprion caroui CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 489 (on *Karooi* RUSSELL, Fishes of Coromandel, vol. 2, 1803, p. 19, pl. 125, Vizagapatam).—CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 998 (Pinang).—DUNCKER, Mitt. Naturh. Mus. Hamburg, vol. 21, 1903 (1904), p. 148 (compiled).

Mesoprion erythrognathus VALENCIENNES, Hist. Nat. Poiss., vol. 7, 1831, p. 447. Seychelles.—PLAYFAIR, Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).

Mesoprion xanthopterygius BLEEKER, Verh. Batav. Genootsch. (Percoid.), vol. 22, 1849, p. 46. Batavia.

Mesoprion argenteus HOMBRON and JACQUINOT, Voy. Astrolabe et Zelée, Zool., vol. 3, 1853, p. 39, pl. 2, fig. 4. No locality.

Mesoprion dodecanthoides (not BLEEKER) GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 206 (Madras).

Mesoprion erythropterus (not BLOCH) GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 205 (part).

Lutjanus erythropterus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (20) 298, fig. 2; vol. 8, 1876–1877, p. 53 (Sumatra, Nias, Pinang, Banka, Java, Celebes, Sumbawa, Amboina).—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 90 (part).—SEALE, Philippine Journ. Sci., vol. 9, No. 1, 1914, p. 66 (Hong Kong).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 197 (description from BLEEKER only).

Rhomboplitoides megalops FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1918, p. 33, fig. 4. Philippines.

Depth 2⅘ to 3½; head 2⅗ to 2¾, width 1⅘ to 2⅗. Snout 3½ to 4⅗ in head from snout tip; eye 3 to 4⅗, greater to subequal with snout, little greater than interorbital; maxillary reaches ⅓ to ⅖ in eye, expansion 2⅛ to 2⅖ in eye, length 2¼ to 2⅓ in head from snout tip; bands of minute teeth in jaws, outer row little enlarged; pair of canines in front of each jaw, variably double and several lower lateral canines each side; villiform teeth on vomer and palatines, on former rhomboid area with backward extension; interorbital 4 to 4½, broadly convex; preopercle edge finely denticulate, without gash above angle. Gill rakers 8+16 to 19, lanceolate, little longer than gill filaments or 1⅔ to 2⅙ in eye; usually 2 lower gill rakers rudimentary.

Scales 43 to 45 in lateral line to caudal base and 3 or 4 more on latter; 6 or 7 scales above lateral line, 12 or 13 below, 22 predorsal forward opposite front pupil edge of which 10 to 12 to occiput, 5 or 6 rows on cheek to preopercle ridge. Tubes of lateral line often with several branches. Scales with 10 or 11 basal radiating striae; apical denticles 30 to 72, with 6 or 7 transverse series of basal elements; circuli fine.

D. XI, 12, I or 13, I, third spine 2¼ to 2½ in total head length, first ray 3 to 3½; A. III, 8, I or 7, I, third spine 2½ to 3, first ray 2¼ to 2⅔; caudal 1¼ to 1⅓, slightly emarginate; least depth of caudal peduncle 3 to 3⅛; pectoral 1⅕ to 1⅓; ventral 1½ to 1⅔.

Back and upper surface brown, below uniformly pale. Slightly dark brown band from snout tip through eye and back to caudal base little above middle. Above dark lateral band oblique slightly darker lines following courses of scales and below as horizontal darker lines. Iris whitish. Fins all pale brownish.

Red Sea, Arabia, Zanzibar, India, Ceylon, Pinang, East Indies, Philippines. A brilliant slender species, with very narrow preorbital and scales extended forward toward front of the eyes.

The *Karooi* of Russell is doubtless intended for this fish, though the extremely small scales are shown on the head extending forward on the preorbital and snout. Length 178 mm. Rüppell's figure of *Diacope lineolata* shows a very narrow preorbital, like Day's figures of *Lutianus lineolatus.* Day examined two of the types of *Serranus nouleny* and found them the same species. Valenciennes says they were received from Leschenault, who gave the colors as golden yellow, below rosy, head and paired fin reddish, caudal golden yellow? Length 127 mm.

Mesoprion argenteus as figured by Hombron and Jacquinot has a truncate caudal. Predorsal scales shown extending forward to middle of eye at best. Scales above lateral line irregular, apparently intended as oblique rows, below horizontal. Preopercle edge with slight notch, though no distinct knob. D. XI, 13. A. III, 8. Uniform silvery, back deeper. Fins yellowish, except grayish spinous dorsal. Length 150 mm.

5596, 5597. Batangas market. June 7, 1908. Length 182 to 208 mm.

20573. Catbalogan, Samar. April 5, 1908. Length 120 mm.

6712 to 6714. Catbalogan. April 16, 1908. Length 107 to 118 mm.

18668, 18670 [1787]. Hinunangan Bay, Leyte. July 30, 1909. Length 98 to 103 mm. General color and stripes very similar, but latter more or bright golden above lateral stripe; fins similar in color but more of general body tone and without white tips or margin in dorsal.

20825. Lingayen Gulf, Luzon. May 11, 1909. Length 58 mm.

7726, 7727. Manila market. March 20, 1908. Length 166 to 183 mm.

11673 [1110], 14232, 14237. Mariveles Bay. January 30, 1909. Length 96 to 147 mm. [1104.] 6 examples.

11812. Matnog Bay. May 31, 1909. Length 148 mm.

6913, 6914, 6916. Tacloban market. July 25, 1909. Length 100 to 141 mm.

18402, 18403. Tataan Island, Tawi Tawi. February 20, 1908. Length 120 to 125 mm.

A1102. Makyan Island, Dutch East Indies. November 28, 1909. Length 220 mm.

12469. Powati Harbor, Makyan Island. November 28, 1909. Length 222 mm.

11151. Hakuko, Soo Wan, Formosa. January 29, 1910. Length 133 mm.

18425 to 18429. Nan Wan, Formosa. January 25, 1910. Length 133 to 150 mm.

56223 U.S.N.M. Bulan. Bureau of Fisheries (3245). Length 150 mm.

27580, 27581 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 135 to 165 mm. Brownish, with narrow darker oblique lines extending up from lateral line to dorsal base till below soft dorsal region, after which forking and extend parallel with those below, which longitudinal. Pale brownish band through eye to caudal base rather broad. Fins mostly pale brown. Below broad lateral band narrow longitudinal lines of darker color than general hue and parallel. As *Lutianus nouleny.*

47507 A.N.S.P. Philippines. Commercial Museum of Philadelphia. Length 162 mm. Type of *Rhomboplitoides megalops.*

LUTJANUS LUTJANUS Bloch

Lutjanus lutjanus BLOCH, Naturg. Ausländ. Fische, vol. 4, 1790, p. 107. Japan—WALBAUM, Artedi Pisc., vol. 3, 1792, p. 678 (on BLOCH).—FORSTER, Fauna Indica, 1795, p. 16.—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (36) 314, fig. 3; vol. 8, 1876–1877, p. 52 (Sumatra, Singapore, Banka, Java, Duizend Islands, Bawean, Bali, Celebes, Ceram, Amboina, Waigiu?).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 197 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Padang).

Lutianus lutianus BLOCH, Naturg. Ausländ. Fische, vol. 4, 1790, pl. 245.—SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 324 (Seas of Japan).

Mesoprion lutjanus CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 479 (compiled).—KNER, Reise Novara, Fische, 1865, p. 37 (Java).—PLAYFAIR, Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).

Mesoprion olivaceus CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 478. Waigiu.

Mesoprion madras VALENCIENNES, Hist. Nat. Poiss., vol. 7, 1831, p. 446. Seychelles, Mahé.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 200 (compiled).—DAY, Fishes of Malabar, 1865, p. 14 (compiled).—SCHMELTZ, Cat. Mus. Godeffroy, vol. 4, 1869, p. 13 (Pelew Islands).

Lutianus madras DAY, Fishes of India, pt. 1, 1875, p. 47, pl. 14, fig. 3.—FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 524 (Padang).—PEARSON, Ceylon Administr. Rept., 1915–18, pp. F16, F17.—JORDAN and STARKS, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 449 (Ceylon).—MALPAS, Ceylon Administr. Rept., 1921, pp. E5–E7.—PEARSON, Ceylon Administr. Rept., 1922, p. F6.

Lutjanus madras DAY, Fauna Brit. India, Fishes, vol. 1, 1881, p. 480.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 89, pl. 12, fig. 4 (type).—PELLEGRIN, Bull. Soc. Zool. France, vol. 30, 1905, p. 85 (Baie d'Along, Tonkin).—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Litianus lunulatus (not PARK) EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 80 (Bacon).

Depth 2⅔ to 3; head 2⅗ to 2⅔, width 2⅛ to 2⅖. Snout 3⅖ to 3⅔ in head from snout tip; eye 3½ to 3¾, 1 to 1$\frac{1}{10}$ in snout, greater than interorbital; maxillary reaches ¼ to ⅓ in eye, expansion 2⅓ to 2½ in eye, length 2⅖ to 2½ in head from snout tip; bands of villiform teeth in jaws, with outer row enlarged of which upper pair of wide set canines and 2 or 3 laterals below; cross like band of villiform teeth on vomer, narrow simple band on each palatine and two broad bands on tongue; interorbital 4⅘ to 4⅞, slightly convex; preopercle edge minutely serrate, scarcely emarginate below. Gill rakers 6+15, of which 4 above and 3 below rudiments, others ⅖ of eye and lanceolate.

Scales 47 to 49 in lateral line to caudal base and 7 more on latter; 7 scales above lateral line, 13 below, 20 predorsal forward opposite eye center of which 12 forward to occiput, 7 rows on cheek of which 1 on preopercle flange. Suprascapula denticulate. Scales with 10 to

13 basal radiating striae; apical denticles 58 to 72 with 2 transverse series of basal elements; circuli fine.

D. X, 13, I, third spine 2⅖ to 2⅔ in total head length, first ray 2¾ to 3; A. III, 8, I, third spine 2⅗ to 3, first ray 2⅖ to 2¾; least depth of caudal peduncle 3 to 3¼; caudal 1 to 1⅖, emarginate; pectoral 1¼ to 1⅓; ventral 1¾ to 1⅘.

Light brown generally, back little more olivaceous, with dark streaks obliquely above lateral line following in middle of each scale row; below in horizontal rows. Lower surfaces silvery white. Iris light yellowish. Fins all pale brown.

Seychelles, Ceylon, East Indies, Tonkin, Japan, Micronesia. Allied with *Lutjanus vitta*, but without the dark lateral band of that species. From *Lutjanus lineolatus* it is distinguished by the broader preorbital.

Mesoprion olivaceus Cuvier is noticed: D. X, 13. A. III, 8. Snout short. Preopercle finely denticulated. Olivaceous, yellowish below.

Mesoprion madras Valenciennes is also briefly noticed: Preopercle denticles feeble. Sixty rows of scales between eye and caudal. D. X, 13. A. III, 9. Yellow, tinted rose. Head and opercles red. Fins yellow. Ventral paler than others. Length 305 mm.

13187. Iloilo market. June 1, 1908. Length 147 mm.
7139 to 7141. Inamucan Bay, Mindanao. August 8, 1909. Length 142 to 162 mm.
5874. Malebang, Mindanao. May 22, 1908. Length 260 mm.
14231. Mariveles wharf. January 30, 1909. Length 121 mm.
9198, 12584. Opol, Mindanao. August 4, 1909. Length 182 to 202 mm.
18702. Port Jamelo. July 13, 1908. Length 163 mm.
A1101, A1103, A1104. Makyan Island. November 28, 1909. Length 229 to 235 mm.
56129 U.S.N.M. Bacon, Philippines. Bureau of Fisheries (3309). Length 174 mm. As *Lutianus lunulatus*. Predorsal scales extend forward opposite middle of eye.
27575 to 27578 A. N. S. P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 106 to 108 mm. When fresh in arrack pale pink or rosy, fins sulphur yellow. Pale olive sulphur band from eye along side, crosses lateral line and extends along upper side of caudal peduncle to base of upper caudal lobe. Scales above lateral line with narrow dull olive lines obliquely up to bases of dorsals. Similar narrow, longitudinal streaks, paler and more yellowish below lateral line, extend from head to caudal. Cheek somewhat rosy. Iris pale orange. Peritoneum silvery. As *Lutianus madras*.

LUTJANUS LINEATUS (Quoy and Gaimard)

Diacope lineata Quoy and Gaimard, Voy. Uranie, Zool., 1824, p. 309. Rawak; Waigiu.—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 101 (types).

Mesoprion lineatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 193 (compiled).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Singapore; Palaboen, Java).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (North Celebes).

Lutjanus lineatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (26) 304, fig. 4; vol. 8, 1876–1877, p. 8 (Sumatra, Singapore, Java, Celebes, Timor, Batjan, Buru, Ceram, Amboina, Obi Major, Waigiu).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 200 (not Christmas Island or Apia specimens); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Padang; type of *Lutianus furvicaudatus*).

Lutianus lineatus FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525 (Padang).—SMITH and SEALE, Proc. Biolog. Sci. Washington, vol. 19, June 4, 1906, p. 77 (Mindanao).—JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 257 (Lubang; Aparri).—GILCHRIST and THOMPSON, Ann. South Afric. Mus., vol. 11, pt. 2, 1911, p. 30 (Durban); Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 344 (references).

Serranus limbatus VALENCIENNES, Hist. Nat. Poiss., vol. 2, 1828, p. 307 (Guam).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 125 (compiled).

Diacope striata (QUOY and GAIMARD) CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 430. Waigiu; Bourou.

Mesoprion janthinuropterus BLEEKER, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. 751. Bulucomba, Celebes.

Lutianus nigricauda DE VIS, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 391. Queensland coast.

Genyoroge nigricauda KENT, Great Barrier Reef, 1893, p. 370 (Queensland).

Lutianus furvicaudatus FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 525, pl. 18, lower figure. Padang.

Depth 2½ to 2⅗; head 2½ to 2¾, width 2⅗ to 2¾. Snout 2⅔ to 2⅘ in head from snout tip; eye 4⅔ to 5, 1½ to 1¾ in snout, greater than interorbital; maxillary reaches ¼ to ⅓ in eye, expansion 1⅔ to 1⅘ in eye, length 2⅕ to 2½ in head from snout tip; jaws with narrow bands of villiform teeth, in mandible only anteriorly and both jaws with single outer series of rather large teeth, forming 2 front canines above and below and 5 median along each mandibular ramus enlarged; bands of villiform teeth on vomer, palatines and tongue; interorbital 5⅔ to 5¾, little convex; preopercle edge minutely serrate, with slight emargination below and still below rather large well separated marginal denticles. Gill rakers 7+15, lanceolate, compressed, much longer than gill filaments or ⅗ of eye.

Scales 45 to 49 in lateral line to caudal base and 6 or 7 more on latter; 8 to 10 scales above lateral line, 16 or 17 below, 14 to 16 predorsal forward to occiput, 7 rows on cheek to preopercle ridge. Scales with 13 basal radiating striae; apical denticles 77 to 100, with 10 to 16 transverse series of basal elements; circuli very fine.

D. X, 13, I or 14, I, fourth spine 2¼ to 2⅔ in total head length, fourth ray 2¾ to 3; A. III, 8, I, third spine 3⅖ to 3⅗, second ray 2⅖ to 2⅔; caudal 1¼ to 2⅖, emarginate; least depth of caudal peduncle 2¾ to 3; pectoral 1¼ to 1⅓; ventral 1¾ to 1⅘.

Brown, below paler to whitish. Each row of scales with slightly darker streak, above lateral line oblique, below horizontal. Iris yellowish brown. Dorsals and caudal brown, especially latter, which variably dark. Paired fins and anal pale.

Durban, Madagascar, Singapore, East Indies, Philippines, Queensland, Micronesia, Polynesia. A pale colored species suggestive of

Lutjanus vaigiensis but with longer snout and upper front profile usually little convex, also back more elevated. My examples agree well with Bleeker's figure.

Lutianus nigricauda is apparently a synonym. It is noted with: Depth 3½ in total length; head 3½. Snout equals orbit, 3½ in head; preopercle finely serrated, moderate notch above angle; interorbital 5½ in head. Scales 48. D. X, 15. A. III, 8. Caudal well emarginate. Yellowish gray. Caudal nearly black, with very narrow white edge. Soft dorsal webs and of spinous dorsal behind first two spines broadly edged black, extreme edging pale. Length 102 mm.

15491. Butauanan Island. June 15, 1909. Length 229 mm.

8267. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 279 mm. Dusky orange stripes following scale rows, formed by short stripe through center of each scale; stripes below lateral line widest and nearly ⅓ of each scale depth, above lateral line ¼, not regular or sometimes mark at corner of scale; stripes obscure or cease below middle of pectoral base. Two short waved stripes on preorbital obliquely downward from eye; another along middle of cheek, almost parallel to first from about even with hind eye edge to middle of maxillary, brown dots above and below. No spots on top of head, but some before nostril. On scales of head markings become stripes, not following scales; about 5 stripes between even with lower edge of eye and upper corner of tip of maxillary; few scattered spots below and few between main stripes. Two or 3 irregular stripes behind eye, general shades dark olive, become somewhat reddish on fading; lower portions rather white or silvery. Dorsal like body color at base, becomes rich red brown toward top; front edge of soft dorsal white. Anal like soft dorsal but paler. Caudal reddish brown, with white edge on inner half of fork. Pectoral axils slightly dusky.

27596 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 186 mm. Type of *Lutianus furvicaudatus*.

27584 to 27585 A.N.S.P. Padang. A. C. Harrison and H. L. Hiller. Length 197 to 200 mm. When fresh in arrack dull olivaceous above, below rosy, though not rosy on sides which paler than back. Narrow dark brownish olive lines obliquely up from lateral line to dorsal profile and below somewhat gilded olive horizontal lines, becoming brighter on abdomen. Soft dorsal edge deep brown, basal portion pale brown. Spinous dorsal dusky marginally, otherwise pale brown. Anal broadly pale brown on outer rayed portion, basally pale yellowish. Caudal deep brown, narrowly edged whitish. Paired fins yellowish, pectoral with little dusky and ventral pale orange basally.

Subgenus DIACOPE Cuvier

Preopercle with distinct notch, often very deep and interopercle armed with strong spur. Scales above lateral line in oblique or partly oblique rows. Predorsal scales forward into interorbital.

LUTJANUS RUFOLINEATUS (Valenciennes)

Diacope rufolineata VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 531. New Guinea.

Lutjanus rufolineatus Weber, Siboga Exp., vol. 57, Fische, 1913, p. 250 (Banda).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 196 (copied).

Diacope vitianus Hombron and Jacquinot, Voy. Astrolabe et Zelée, Zool., vol 3, 1853, p. 37, pl. 2, fig. 2. Viti, Polynesia.

Mesoprion amboinensis Bleeker, Nat. Tijds. Nederland. Indië, vol. 3, 1853, p. 259. Amboyna.

Genyoroge amboinensis Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 183 (Amboina).—Day, Proc. Zool. Soc. London, 1870, p. 677 (Andamans).

Lutjanus amboinensis Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (40)318, fig. 2; vol. 8, 1876–1877, p. 57 (Bali, Celebes, Ternate, Obi, Buru, Ceram, Amboina, Waigiu, New Guinea).—Tirant, Service Océanogr. Pêches Indo Chine, 6^e Note, 1929, p. 168 (Phu-Yen).

Lutianus amboinensis Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 81 (Bulan).

Mesoprion melanospilos Bleeker, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. 750. Bulucomba (Celebes).

Genyoroge melanospilos Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 183 (copied).

Depth 2⅗; head 2⅗, width 2⅕. Snout 3⅙ in head; eye 3⅞, 1⅕ in snout, greater than interorbital; maxillary reaches ⅓ in eye, expansion 2⅓ in eye, length 2⅗ in head; teeth in villiform bands in jaws, outer row little enlarged; pair of low, wide set upper front canines; band of villiform teeth on vomer and each palatine; interorbital 4⅓, broadly convex; preopercle edge denticulate, denticles larger around lobe at angle and notch above rather deep though with small interopercular knob. Gill rakers 7+15, of which several above and below rudimentary, longest 2½ in eye.

Scales 67 along above lateral line to caudal base and about 10 more out over latter; tubular scales 50 in lateral line to caudal base and 8 more on latter; 9 scales above lateral line, 17 below, 27 predorsal forward opposite front pupil edge, 14 rows across cheek of which 4 rows on preopercle flange. Suprascapula denticulate. Scales with 7 to 13 basal radiating striae; apical denticles 66 to 84, very fine points, short, with 9 or 10 transverse series of basal elements; circuli very fine.

D. XI, 13, i, fourth spine 2⅗ in head, first ray 3½; A. III, 8, i, second spine 2⅘, second ray 2⅗; caudal 1⅓, slightly emarginate behind; least depth of caudal peduncle 3¼; pectoral 1¼; ventral 1⅔.

Largely warm brown over upper surfaces, below little paler. On body each row of scales with narrow darker line than body color, oblique above lateral line, horizontal below. Iris gray brown. Fins all dull brown, pectoral little paler than ventrals.

Andamans, East Indies, Philippines, Polynesia.

56041 U.S.N.M. Bulan. Bureau of Fisheries (3226). Length 167 mm. As *Lutianus amboinensis*.

LUTJANUS CAERULEOVITTATUS (Valenciennes)

Diacope caeruleovittatus VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1831, p. 530. Mauritius.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 94, pl. 12, fig. 2 (type).

Genyoroge caeruleovittata GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, pp. 179 (copied), 504.

Diacope angulus BENNETT, Proc. Zool. Soc. London, 1831, p. 127. Mauritius.

Depth 2½ to 2⅗; head 2⅗ to 2½, width 2 to 2⅓. Snout 3⅙ to 3⅕ in head from snout tip; eye 3⅖ to 4, 1⅛ to 1⅓ in snout, slightly greater than interorbital; maxillary reaches ⅓ in eye, expansion 2⅓ to 2⅗ in eye, length 2⅓ to 2½ in head from snout tip; teeth fine, in narrow bands in jaws, outer row little enlarged and 4 canines in front of each jaw formed in outer series; narrow band of fine teeth on vomer and palatines; interorbital 5 to 5¼, slightly convex: preopercle edge finely denticulate, with deep gash receiving strong interopercular spine like knob, which directed outward. Gill rakers 7+15, of which 5 or 6 rudiments above and below, lanceolate, little longer than gill filaments or 2⅖ in eye.

Scales 58 in lateral line to caudal base and 15 more on latter; tubes 46 in lateral line to caudal base and 7 more on latter; 10 scales above lateral line in oblique row, 16 below, 28 predorsal extending forward opposite front eye edge, 5 rows on cheek. Suprascapula entire. Scales with 16 to 22 basal radiating striae; apical denticles 94 to 98, with 6 transverse series of basal elements; circuli fine.

D. XI, 13, I, fourth spine 2¾ to 2⅘ in total head length, first ray 3⅗ to 4; A. III, 8, third spine 2⅘ to 3, third ray 2⅓ to 2⅖; caudal 1¼ to 1⅓, emarginate; least depth of caudal peduncle 3⅖ to 3½; pectoral 1⅛ to 1⅕; ventral 1½ to 1¾.

Brown, but little paler below. Obscure darker horizontal streaks, made up of spots and bars, about 9 on back and sides, all ill defined. Iris brown. Vertical fins with more or less dusky. Paired fins pale.

Mauritius, Madagascar, Philippines, and China. Evidently my examples are the present species, well figured by Sauvage from one of the original discolored specimens. Its very conspicuous deep cut preopercular gash with an exceptionally large interopercular spine will distinguish it. It was noticed by Sauvage with 8 blue bands, without borders, on each flank, 4 upper extending from the head as in *Lutjanus kasmira*, 4 lower more narrow, compact, follow curve of belly, reaching throat. Head purple. Color of body golden yellow, belly silvery white. Dorsal green, clouded olive, other fins yellow. Length 230 mm., reaches 410 mm.

5873. Malabang market, Mindanao. May 22, 1908. Length 250 mm.
A1604. Nafa, Okinawa, Riu Kiu. February 7, 1910. Length 293 mm.

LUTJANUS DUODECIM LINEATUS (Valenciennes)

Diacope duodecim lineata VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 529. Mauritius.—GUICHENOT, Notes Ile Réunion, vol. 2, 1862, p. 23.

Diacope duodecim-lineata SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 96, pl. 13, figs. 3, *a-c* (type).

Lutianus duodecimlineatus BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 653 (Natal).

? *Labrus octovittatus* (COMMERSON) LACÉPÈDE, Hist. Nat. Poiss., vol. 3, 1802, pp. 430, 477, pl. 22, fig. 2. Grand Ocean (Indo Pacific).

Lutjanus octovittatus BLEEKER, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 3, 1862, p. 70 (Bourbon); Recherche Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 27, pl. 9, fig. 1.

Lutianus quinquelinearis (not BLOCH) GILCHRIST and THOMPSON, Ann. South Afric. Mus., vol. 13, 1914, p. 65.

Depth 2¾; head 2⅔. Snout 3⅛ in head from upper jaw tip; eye 3½, 1⅛ in snout; maxillary reaches eye, expansion 2⅕ in eye, length 2⅘ in head from snout tip; teeth very strong, triangular band on vomer, none on tongue; interorbital low; preopercle edge denticulate, deeply notched to receive strong bony knob or spine on interopercle.

Scales 52 in lateral line, 9 above, 17 below. D. XI, 13, fourth spine 2¾ in total head length, first ray 4; A. III, 8, second spine 3, first ray 2¾; caudal 1¼, slightly emarginate behind; least depth of caudal peduncle 3⅕; pectoral 1⅕; ventral 2¼. Lilac, with 6 narrow gray or blue bands, all beginning behind head, inclined upward to base of dorsal fins and 2 lowest less inclined. Length 215 mm. (Sauvage.)

Madagascar. According to Barnard lower gill rakers 12 or 13, color orange yellow with 6 lilac or blue streaks and reach up to 300 mm. Distinguished from *Lutjanus kasmira* by the narrow blue streaks, the upper radiating from the head.

The crude figure of *Labrus octovittatus* differs at once from Bleeker's figure of *Lutjanus octovittatus* and that of Sauvage representing *Diacope duodecim-lineata* in that the dark bands on the upper part of the body, but 4 in number and inclined, also all above the median axis of the body, all begin in the head.

LUTJANUS SPILURUS (Bennett)

Diacope spilura BENNETT, Proc. Zool. Soc. London, 1832, p. 182. Ceylon Sea.

Genyoroge spilura GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 504 (copied).

Holocentrus quinquelineatus (part) BLOCH, Naturg. Ausländ. Fische, vol. 4, 1790, p. 94.

Mesoprion quinquelineatus CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 442 (Java).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 206 (part).—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 232 (New Guinea).—ELERA, Cat. Fauna, Filip., vol. 1, 1895, p. 460 (Cebu).

Lutianus quinquelineatus DAY, Fishes of India, pt. 1, 1875, p. 40, pl. 12, fig. 3 (BLOCH'S example examined; Andamans).—BRYAN and HERRE, Occas. Pap. Bishop Mus., vol. 2, No. 1, 1902(1903), p. 130 (Marcus Island).—JORDAN and SEALE, Bull. Bur. Fisher., vol. 26, 1906(1907), p. 20 (Cavite).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 79 (Bulan; Bacon).—SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 499 (Okinawa).—PEARSON, Ceylon Administr. Report, 1915–1918, p. F18.

Lutjanus quinquelineatus BLEEKER, Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 33, pl. 16, fig. 3 (Bourbon); Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 56, pl. 65(343), fig. 4 (Sumatra, Nias, Cocos, Java, Duizend Islands, Bawean, Bali, Flores, Timor, Celebes, Halmaheira, Ternate, Batjan, Burou, Ceram, Amboina, Banda, New Guinea).—TIRANT, Service Océanogr. Pêches Indo Chine, 6^e Note, 1929, p. 168 (Phu-Yen).

Diacope coeruleo-lineata RÜPPELL, Neue Wirbelth., Fische, 1835, p. 93. Massaua and Djedda.

Diacope coeruleolineata RÜPPELL, Neue Wirbelth., Fische, 1835, pl. 24, fig. 3.

Diacope coeruleolineatus KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 701 (Massaua; Djedda).

Mesoprion coeruleolineata KLUNZINGER, Fische Roth. Meer., 1884, p. 15.

Lutjanus caeruleolineata DAY, Fishes of India, Suppl., 1888, p. 783 (note).

Lutjanus caeruleolineatus DAY, Fauna Brit. India, Fishes, vol. 2, 1898, p. 474.

Lutjanus (*Mesoprion*) *caeruleolineatus* STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 128 (Gischin, Makalla, Tamarida).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Oman).

Genyoroge notata var. *sublineata* DE VIS, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 391. Cardwell.

Genyoroge notata var. *sexlineata* KENT, Great Barrier Reef, 1893, p. 370 (Queensland) (lapsus).

Evoplites decemlineatus (not VALENCIENNES) FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 524 (Padang).

Lutjanus kasmira (not FORSKÅL) FOWLER, Bull. Bishop. Mus., No. 22, 1925, p. 9 (Guam); Mem. Bishop Mus., vol. 10, 1928, p. 195 (New Guinea; Fiji; Magdalene and Tempe, Marquesas Islands; Apia; Tahiti; Marcus Island; Apang; Society Islands; Ebon Island; Meos Boendi, Wiak Island, New Guinea).

Depth 2⅖ to 2¾; head 2½ to 2⅔, width 1⅘ to 2⅕. Snout 3 to 3⅗ in head; eye 3⅛ to 4, greater than snout in young to 1¼ in snout with age, greater than interorbital in young to equal with age; maxillary reaches ¼ to ⅓ in eye, expansion 1 to 1⅘ in eye, length 2⅖ to 2½ in head; teeth villiform, in narrow bands in jaws, with outer row enlarged, conic, little curved, usually as pair above slightly canine like and 2 or 3 more on each mandibular ramus; crescentic band of vomerine teeth, also band on each palatine, tongue smooth; interorbital 4⅕ to 5¼, convex; preopercle edge denticulate, with deep gash usually receiving strong bony knob; young with strong extended spine at angle but without gash. Gill rakers 7+15, of which 5 or 6 as rudimentary above and below, longer than gill filaments or 1¾ in eye.

Scales 48 to 50 in lateral line to caudal base and 5 or 6 more on latter; 9 scales above lateral line, 18 to 20 below, predorsal 26 to 36 forward opposite front eye edge or above hind nostril and 14 to 26 forward to occiput, 6 to 10 rows on cheek of which last 3 on preopercle flange. Scales with 13 to 16 basal radiating striae; apical denticles 76 to 82, with 3 to 5 transverse series of basal elements; circuli very fine.

D. X, 14, I, third spine 2¾ to 3⅛ in head, eighth ray 3 to 4; A. III, 8, I, second spine 2⅖ to 2¾, second ray 2⅖ to 2¾; caudal 1⅓ to 1⅖, well emarginate; least depth of caudal peduncle 3 to 3⅓; pectoral 1⅛ to 1¼; ventral 1¾ to 1⅘.

Largely dull brown, little paler below or on under surfaces. Five leaden or gray longitudinal bands, each with darker line as margin and 4 extend from eye. Iris yellowish brown. Fins all dull brown.

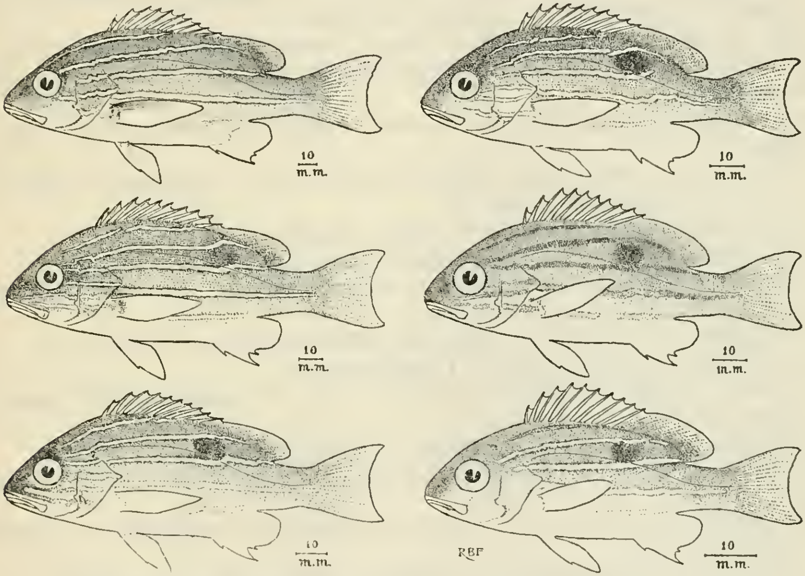

FIGURE 13.—LUTJANUS SPILURUS (BENNETT). VARIATION OF COLOR MARKINGS

Red Sea, Arabia, Bourbon, Ceylon, Andamans, East Indies, Philippines, China, Riu Kiu, Melanesia, Micronesia, Polynesia. A handsome species easily known by the five longitudinal gray bands, slightly inclined forward. These bands are remarkably constant in my series of specimens and only vary in very slight detail. The third only very seldom begins on the postocular, usually starting from the opercle. Both Bleeker and Day show figures with three bluish bands continuous from the postocular. The young differ from adults or larger specimens in not having a preopercular gash, also the absence of a bony knob or spine fitting in, and in the enlarged spine at the preopercle angle. A few examples still retain the black blotch on the back below the intersection of the dorsals.

Genyoroge notata var. *sublineata* De Vis is likely this species: D. X, 13; A. III, 8. Scales 49 in lateral line to caudal base and 8 above, 13 below. Ascending lines above lateral line wanting. Upper stripe along lateral line and passes through black blotch. One below it also passes within edge of spot. Length 191 mm.

4958 [1238], 4957 [1239], 15169. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 162 to 178 mm. Five blue lines along side, fourth from top divided on cheek. Black blotch on back under front part of soft dorsal between second and third lines.

18768. Busin Harbor. March 7, 1908. Length 213 mm.

5667. Busin Harbor, Burias Island. April 23, 1908. Length 204 mm. These specimens represent approximately two sizes found on the reef, where the species was apparently schooling. At least 100 were taken. The females represented both sizes, but only one male was found. The reproductive organs were large, but not very near maturation.

17077. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 172 mm.

6450, 16139 to 16141. Mahinog, Camiguin Island. August 3, 1909. Length 132 to 166 mm.

14985, 14986, 14988, 15798. Makesi Island, Palawan. April 5, 1909. Length 109 to 147 mm.

18559 to 18561, 18869, 21291. Malanipa Island, east of Zamboanga. September 8, 1909. Length 41 to 197 mm.

18652. Manila market. December 5, 1908. Length 59 mm.

18817, 18818. Pandanon Island. March 23, 1909. Length 178 to 197 mm.

8345 [706], 8346. Port San Pio Quinto, Camiguin Islands. November 11, 1908. Length 76 to 143 mm. 27 examples.

13791, 13792. Pratas Island. October 25, 1908. Length 93 to 134 mm.

7017. Romblon. March 26, 1908. Length 192 mm.

8467, 14019, 18150. Santo Domingo, Batan Island. November 7, 1908. Length 109 to 136 mm.

12210. Santa Cruz, Marinduque Island. April 24, 1908. Length 207 mm.

8296, 8298, 8299, 8300, 17774. San Miguel, Tabaco Bay. June 4, 1909. Length 46 to 61 mm.

A611. Singaan Island, between Jolo and Tawi Tawi. September 21, 1909. Length 233 mm.

15536, 15537. Tilig Bay, Lubang. July 15, 1908. Length 90 to 96 mm.

5128, 5129. Usada Island, near Jolo. March 5, 1908. Length 193 to 213 mm.

11046, 13687, 13688, 16215 to 16217. Cape Kait, Libani Bay, Celebes, Dutch East Indies. December 29, 1909. Length 98 to 150 mm.

13608, 18141, 21380. Labuan Blanda Island. December 14, 1909. Length 98 to 170 mm.

13556. Tana Keke Island, Flores Sea. December 21, 1909. Length 158 mm.

19796, 19797. Gomomo Island. December 3, 1909. Length 84 to 101 mm.

12471. Powati Harbor, Makyan Island. November 28, 1909. Length 200 mm.

11162. Nan Wan Bay, Formosa. January 25, 1910. Length 185 mm.

4329. Station 5065. Osesaki (35° 05′ 40″ N., 138° 39′ 30″ E.). October 15, 1906. Length 188 mm.

8355. Reefs in Apra Bay, Guam. November 19 to 21, 1907. Length 118 mm.

19988 U.S.N.M. Mauritius. Col. Nicholas Pike. Length 100 to 121 mm. 5 examples.

30580 U.S.N.M. New Guinea. Australian Museum. Length 194 mm. As *Lutianus coeruleolineatus*.

30580 U.S.N.M. New Guinea. Australian Museum. Length 190 mm. As *Lutianus coeruleolineatus.*

32715 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 97 mm. Third pale band extends from preopercle edge. As *Lutjanus bengalensis.*

56064 U.S.N.M. Luzon. Bureau of Fisheries (3311). Length 148 mm. As *Lutianus quinquelineatus.*

71978 U.S.N.M. Japan. Bureau of Fisheries. Length 84 to 206 mm. 2 examples. As *Lutianus quinquelineatus.*

72275 U.S.N.M. Aparri, Philippines. R. C. McGregor. Length 56 mm. As *Lutjanus quinquelineatus.*

27573, 27574 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 190 to 198 mm. When fresh in arrack pale yellowish brown, slightly darker on back. Along side six narrow slaty silver-colored longitudinal lines, edged narrowly dark slaty. First line close along upper profile to base of fourth dorsal spine; third crosses suprascapula to reach middle of soft dorsal base; fourth from middle of hind eye edge to upper caudal peduncle edge; fifth crosses opercle little below flap and reaches caudal base medianly; lowest along lower preorbital region across pectoral base to lower caudal peduncle surface. From below eye similar line runs back to pectoral origin. Iris pale yellowish, with brown above. Fins uniform, like general color. As *Evoplites decemlineatus.*

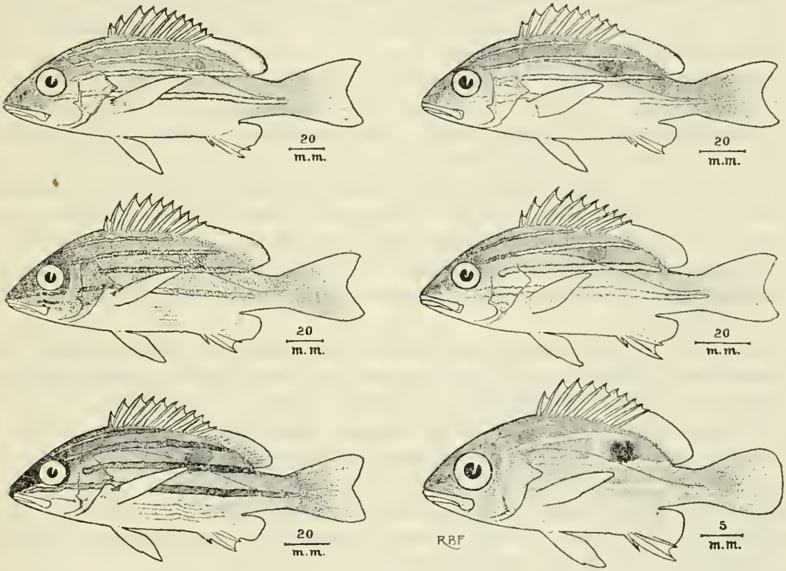
20 m.m.
20 m.m.
20 m.m.
20 m.m.
20 m.m.
RBF
5 m.m.

Figure 14.—Lutjanus kasmira (Forskål). Variation of color markings

LUTJANUS KASMIRA (Forskål)

Sciaena kasmira Forskål, Descript. Animal., 1775, pp. xi, 46. Arabia.—Bonnaterre, Tabl. Ichth., 1788, p. 122 (Red Sea).—Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 1299 (Arabia).—Walbaum, Artedi Pisc., vol. 3, 1792, p. 314 (copied).

Grammistes kasmira Schneider, Syst. Ichth. Bloch, 1801, p. 189 (Red Sea).

Labrus kasmira Lacépède, Hist. Nat. Poiss., vol. 3, 1802, pp. 434, 483 (Arabia).

Diacope kasmira Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 695 (Koseir, Red Sea).

Mesoprion kasmira Klunzinger, Fische Roth. Meer., 1884, p. 12.

Lutjanus kasmira Day, Fishes of India, Suppl., 1888, p. 783 (note); Fauna Brit. India, Fishes, vol. 2, 1889, p. 468.—Jordan and Fesler, Rep. U. S. Fish Comm., pt. 17, 1889, (1893), p. 439 (Swatow).—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Oman).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 117 (Buton, Ambon).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 248 (Labuan Tring, Lombok; Lirung, Salibabu; Saleyer; Banda; Feer, High Key; Pepela Bay, Rotti).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 29 (Zamboanga).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 476 (Santa Maria, Philippines).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, 1927, p. 6 (Benkoelen, Sumatra).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 195 (Fiji; Nukuhiva; Mangareva; Marcus Island; Agaña, Guam); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 635 (Marcus Island, Tahiti, Mangareva, Nukuhiva, Padang).

Lutianus kasmira Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 76 (Kagoshima; Nagasaki).—Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 261 (Pago Pago).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 257 (Fuga Island).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 446 (Fuga Island).—Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 286 (Suva, Fiji).—Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 499 (Okinawa).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 151 (Okinawa).

Lutjanus (Genyoroge) kasmira Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 128 (Gischin, Shieck Othman, Bal Hel, South Arabia; Ras Shoab and Kalansiye, Sokotra).

Holocentrus quinquelineatus Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, p. 84. Japan.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 643 (on Bloch).—Lacépède, Hist. Nat. Poiss., vol. 4, 1802, p. 357 (Japan).

Mesoprion quinquelineatus Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (North Celebes; Cebu).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 56.

Holocentrus quinquelinearis Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, pl. 239.—Forster, Fauna Indica, 1795, p. 16.—Lacépède, Hist. Nat. Poiss., vol. 4, 1803, p. 329.

Lutianus quinquelinearis Day, Fishes of India, pt. 1, 1875, p. 46, pl. 14, fig. 1 (type of *Holocentrus quinquelinearis*).—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 13, pt. 3, 1914, p. 65 (Natal).—Regan, Ann. Durban Mus., vol. 1, 1914, p. 168 (Durban).—Bamber, Journ. Linn. Soc. vol. 31, Zool., 1915, p. 480 (Sudanese Red Sea).—Pearson, Ceylon Administr. Report, 1915–18, pp. F. 16, F. 17.—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 449 (Colombo, Ceylon; Philippines).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 345 (references).

Genyoroge quinquelinearis Boulenger, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).

Lutjanus quinquelinearis Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 479.—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Oman).—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Mesoprion quinquelinearis Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 56.

Holocentrus bengalensis Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, p. 102, pl. 246, fig. 2. Bengal.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 645 (on Bloch).—Schneider, Syst. Ichth. Bloch, 1801, p. 316 (Bengal).—Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 330, 357 (Bengal).

Lutjanus bengalensis Forster, Fauna Indica, 1795, p. 16.—Bleeker, Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 35, pl. 9, fig. 2 (Réunion); Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (24) 302, fig. 3; vol. 8, 1876–1877, p. 55, pl. (55) 333, fig. 4 (Sumatra, Java, Celebes, Timor, Ternate, Halmaheira, Batjan, Bouro, Ceram, Amboina, Waigiu); Arch. Néerland. Soc. Sci. Nat. Harlem, vol. 13, 1878, p. 36 (New Guinea).—Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 47, pt. 1, 1883, p. 236 (Kagoshima).—Kent, Great Barrier Reef, 1893, p. 370 (Queensland).—Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 18, 1912, p. 206 (Port Sandwich, New Hebrides).

Lutianus bengalensis Day, Fishes of India, vol. 1, 1875, p. 33, pl. 10, fig. 4.—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 436 (Mauritius); 1876 (1877), p. 831 (Carteret Harbor, New Ireland).—Waite, Mem. Australian Mus., No. 3, 1897, p. 183 (Funafuti, Ellice Islands).—Seale, Occas. Pap. Bishop Mus., vol. 1, No. 3, 1900 (1901), p. 78 (Guam).—Bryan and Herre, Occas. Pap. Bishop Mus., vol. 2, No. 1, 1902 (1903), p. 130 (Marcus Island).—Seale, Occas. Pap. Bishop Mus., vol. 6, No. 1, 1906, p. 44 (Faté, Nukuhiva, Tahiti).—Regan, Ann. Durban Mus., vol. 1, 1908, p. 168 (Natal).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 341 (references).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 652 (Natal, Delagoa Bay, Mozambique).

Genyoroge bengalensis Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 178 (China, India, Fiji, Louisiades, Amboina, Mauritius, Red Sea).—Schmeltz, Cat. Mus. Godeffroy, No. 3, 1866, p. 7 (Samoa).—Playfair, Fishes of Zanzibar, 1866, p. 15 (Aden; Zanzibar); Proc. Zool. London, 1867, p. 848 (Seychelles).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Upolu).—Capello, Jorn. Soc. Sci. Math. Lisboa, 1871, p. 196 (Mozambique).—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Larentuka, Flores).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 37 (South Sea Islands).—Károli, Termesz, Füzetek, Budapest, vol. 5, 1881, p. 151 (Ceylon).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (South Seas), p. 43 (Viti Islands).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (Menado, Celebes; Cebu).—Boulenger, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 282 (Philippine; Luzon).—Kent, Great Barrier Reef, 1893, p. 370 (Queensland).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 464 (Luzon, Manila, Cavite, Santa Cruz, Ilocos, Viagan, Cebu).—Regan, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 331 (Muscat); Trans. Linn. Soc. London, ser. 2, vol. 12, May 1908, Zool., p. 224 (Amirante, Seychelles).

Mesoprion bengalensis Kner, Reise Novara, Fische, 1865, p. 31 (Java; Hong Kong).—Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 12 (Society Islands); Rep. Voy. Challenger, vol. 1, 1880, p. 34 (Kandavu, Fiji).

Diacopus bengalensis Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. (349) 369 (Port Jackson).

Diacope bengalensis Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 97, pl. 13, figs. 1, *a–b* (Madagascar).

Grammiste quinquevittato Schneider, Syst. Ichth. Bloch, 1801, p. 316. Tahiti.

Diacope octolineata Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 418. Tahiti, Mauritius, Red Sea, Pacific Ocean.—Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 75 (north half of Red Sea).—Schlegel, Fauna Japon., Poiss., pt. 1, 1842, p. 12, pl. 6, fig. 2 (Japan).—Richardson, Ichth. China Japan, 1846, p. 229 (Chinese and Japanese seas).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.—Schmeltz, Cat. Mus. Godeffroy, No. 2, 1865, p. 6 (Samoa).—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 99 (type).

Mesoprion octolineatus Bleeker, Act. Soc. Sci. Ind. Néerland., vol. 6, No. 2, 1850, pp. 3, 4 (Doreh, New Guinea).

Perca polyzonia (Forster) Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 419. Tahiti. (Name in text.)

Perca polyzonias Lichtenstein, Descript. Animal., 1844, p. 225 (St. Christian, Wataho).

Perca vittata (Parkinson) Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 420. No locality.

Diacope notata Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 422 (on Russell, Commerson, Peron).—Schmeltz, Cat. Mus. Godeffroy, No. 2, 1865, p. 6 (South Seas).

Genyoroge notata Schmeltz, Cat. Mus. Godeffroy, No. 3, 1866, p. 7 (Samoa); No. 7, 1879, p. 37 (South Sea Islands).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (South Seas).

Diacope octovittata Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 528. Mauritius.

Genrorogc octovittata Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 180 (Mauritius).

Perca vittata (Parkinson) Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 526. Tahiti. (Name in text.)

Diacope decemlineata Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 528. New Guinea; Trinquemale, Ceylon.—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.

Mesoprion etaape Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, 1830, p. 229. Matavia Harbor, Tahiti; Beula Bay, Bora Bora.

Mesoprion pomacanthus Bleeker, Nat. Tijds. Nederland. Indië, vol. 8, 1855, p. 407. Amboina.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 210 (compiled).

Genyoroge grammica Day, Proc. Zool. Soc. London, 1870, p. 679. Andaman Islands.

Depth 2⅗ to 2⅘; head 2½ to 2⅗, width 2¼ to 2⅖. Snout 3⅛ to 3⅘ in head; eye 2⅘ to 3⅘, greater than snout in young to 1⅖ in snout with age, greater than interorbital; maxillary reaches ½ to ⅗ in eye, expansion 2¼ to 2¾ in eye, length 2¼ to 2½ in head; teeth in villiform bands in jaws with outer enlarged row, pair of wide-set canines above in front often double, below as 4 or 5 lesser canines each side in front and 3 or 4 on each mandibular ramus medially; band of fine villiform teeth across vomer and on each palatine; interorbital 4⅖ to 5, slightly convex; preopercle edge denticulate, with deep gash above angle receiving short, sharp, small interopercular point and below marginal denticles larger and few. Gill rakers 6+15, of which 4 above and 5 or 6 below rudiments, lanceolate, little longer than gill filaments or 2¼ in eye.

Scales 78 to 80 along above lateral line to caudal base; tubular scales 48 to 50 in lateral line to caudal base and 7 or 8 more on latter; 10 or 11 scales above lateral line, 16 or 17 below, 25 to 34 predorsal extend forward opposite front eye edge, 6 or 7 rows on cheek to preopercle ridge and 3 more on preopercle flange. Suprascapula denticulate. Scales with 11 to 14 basal radiating striae; apical denticles 72 to 80, very small short points, with 2 to 6 transverse series of basal elements; circuli very fine.

D. X, 14, I or 15, I, fourth spine $2\frac{1}{3}$ to $2\frac{3}{4}$ in head, first ray $3\frac{7}{8}$ to 4; A. III, 8, I, second spine $2\frac{1}{3}$ to $2\frac{9}{10}$, second ray $2\frac{3}{4}$ to $2\frac{4}{5}$; caudal $1\frac{2}{5}$ to $1\frac{1}{2}$, rounded in young to emarginate with age; least depth of caudal peduncle $3\frac{1}{3}$ to $3\frac{4}{5}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$; ventral $1\frac{3}{4}$ to 2.

Back pale or dull brown, below lighter or pale yellowish brown. Iris light yellowish brown. On head and body 4, and occasionally traces of an incomplete lower or fifth band, gray to brown in color and each with darker bordering line, uppermost extends from interorbital each side till below posterior dorsal spines; second from upper hind eye edge to middle of soft dorsal base; third usually from upper front part of opercle to below last dorsal rays or caudal peduncle above, rarely starting at middle of hind eye edge; fourth sometimes on preorbital above middle of maxillary, then along lower eye edge and back over pectoral base to caudal base medially; imperfect fifth band may even start below eye or be obscure along lower side of abdomen or above anal. Dorsal light yellowish brown, both fins usually with rather broad dark border. Caudal dull brown or yellowish. Other fins all yellowish. Diffuse blackish blotch little smaller than eye above lateral line below front of soft dorsal in young.

Red Sea, Arabia, Mozambique, Natal, Mauritius, Réunion, Bourbon, Madagascar, Seychelles, India, Ceylon, Andamans, East Indies, Philippines, China, Riu Kiu, Japan, Queensland, New South Wales, Melanesia, Micronesia, Polynesia.

5891. Calangaman Island, Leyte. March 16, 1909. Length 170 mm.
17076. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 170 mm.
9600. Hermana Mayor Island, Luzon. May 8, 1909. Length 205 mm.
14987. Makesi Island, Palawan. April 5, 1909. Length 137 mm.
21290. Malanipa Island, east of Zamboanga. September 8. 1909. Length 64 mm.
17688, 17690, 17691. Murcielagos, Mindanao. August 9, 1909. Length 174 to 201 mm.
17689. Near Palag Bay, Luzon. June 16, 1909. Length 180 mm.
7718, 7719, 7721. Port Ciego, Balabac. January 3, 1909. Length 140 to 156 mm.
18870. Port Jamelo, Luzon. July 13, 1908. Length 155 mm.
11351, 11352. Port Matalvi. November 22, 1908. Length 188 to 208 mm.
Twenty examples. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 98 to 158 mm.

13789. Pratas Island, China Sea. October 25, 1908. Length 137 mm.
8466, 8468, 8469, 8470 to 8472, 18147 to 18149, 19159, 19160. Santo Domingo de Basco, Batan Island. November 7, 1908. Length 109 to 157 mm.
17775. San Miguel Island, Tabaco Bay. June 4, 1909. Length 53 mm.
16204. Taganak Island. January 7, 1909. Length 63 mm.
15538, 15539, 18948. Tilig, Lubang. July 15, 1908. Length 58 to 162 mm.
13490. Basa Reef, Gulf of Boni, Celebes. December 17, 1909. Length 213 mm.
13685. Cape Kait, Libani Bay, Celebes. December 29, 1909. Length 195 mm.
9509. Dodepo and Pasejogo Islands, Gulf of Tomini, Celebes. November 16, 1909. Length 189 mm.
22857. Gomono Island, Pitt Passage. December 3, 1909. Length 75 mm.
A1603. Nafa, Riu Kiu. February 7, 1910. Length 273 mm.
18422. Nan Wan, Formosa. January 25, 1910. Length 102 mm.
19894 U.S.N.M. Magdalena, Marquesas. Capt. Herndon. Length 188 to 250 mm. Third gray line starts from behind opercle on humeral region.
34797 U.S.N.M. Tahiti. Dr. W. H. Jones. Length 181 mm.
34800 U.S.N.M. Tahiti. Dr. W. H. Jones. Length 165 to 168 mm. 2 examples.
34814 U.S.N.M. Tempe, Marquesas. Dr. W. H. Jones. Length 166 mm. 1 example.
49342 U.S.N.M. Red Sea. Bellotti. Length 111 mm. As *Genyoroge bengalensis*.
52311 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 81 to 97 mm. 2 examples. Third line variable, extends from preopercle ridge on one side and from eye on other side.
58026 U.S.N.M. Zamboanga. Dr. E. A. Mearns. August, 1906. Length 170 to 205 mm. 2 examples.
65936 U.S.N.M. Suva, Fiji. *Albatross* Collection. Length 132 mm.
71933 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection 1906. Length 64 to 245 mm. 3 examples. All have third line from preopercle edge; 2 small examples with black lateral blotch on lateral line.
84266 U.S.N.M. Philippines. Dr. F. Baker. Length 173 mm.

LUTJANUS FULVUS (Schneider)

Holocentrus fulvus Schneider, Syst. Ichth. Bloch, 1801, p. 318. Tahiti.
Perca fulva (Forster) Schneider, Syst. Ichth. Bloch, 1801, p. 318 (name in synonymy).—Lichtenstein, Descript. Animal., Forster, 1844, p. 193 (Tahiti).
Diacope fulva Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 435 (on Schneider).
Genyoroge fulva Günther, Cat. Fish. Brit. Mus., vol 1, 1859, p. 184 (Tahiti).
Mesoprion fulvus Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 13 (type).
Lutianus fulvus Day, Fishes of India, pt. 1, 1875, p. 34, pl. 10, fig. 5.
Lutjanus fulvus Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 408.—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 198 (compiled).
? *Neomesoprion unicolor* Castelnau, Victorian Offic. Rec. Philadelphia Exhib. (Res. Fish. Australia), 1875, p. 8, Cape York.—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 332 (copied).

Depth 2⅔; head 2⅖. Snout 3 in head from snout tip; eye 4, 1⅓ in snout, greater than interorbital; maxillary reaches ¼ in eye, expansion 2 in eye, length 3 in head from upper jaw tip; outer rather numerous row of canine like curved teeth in either jaw and small curved canines above; villiform teeth in triangular patch on vomer, band on each palatine and tongue toothless; interorbital little convex; hind preopercle edge deeply gashed, above serrated, rounded lobe below gash denticulate and pyramidal; interopercular knob well developed.

Scales 72 along above lateral line, 61 along below lateral line; 9 scales above lateral line, 21 below (predorsal scales shown on figure as apparently forward opposite front eye edge and 13 rows over cheek including both suborbitals and preopercle flange).

D. XI, 13, fourth spine 2⅔ in total head length, first ray $2\frac{9}{10}$; A. III, 8, second spine 2⅞, first ray 2⅞; caudal 1½, very slightly emarginate behind; least depth of caudal peduncle 3⅓; pectoral 1⅕; ventral 1⅘.

Uniform yellowish-red, with dark spot in pectoral axil. Fins yellow. Upper third of dorsal black, with white margin. Caudal also with black mark across middle of first third of anal. Length 255 mm. (Day.)

Andamans, Queensland ?, Polynesia.

Neomesoprion unicolor Castelnau may possibly have been intended for the present species, with its generic status admitted solely on the presence of but 9 dorsal spines, possibly an individual variation? It is noted incompletely as follows:

Depth little over 2½ without caudal; head 2⅔. Body oval, high, upper profile strong convex. Eye little over 4 in head, 1½ in snout. Opercle pointed. Scales on front part of head very minute, on opercles large as on body. D. IX, 15, second spine longest and others decrease. A. III, 9, first spine short others subequal, ½ of rays. P. 14, large. Scales 64 in lateral line. Silvery with yellow tinge. Length 280 mm.

LUTJANUS LUZONIUS Evermann and Seale

Lutianus luzonius Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 79, fig. 13. Bacon.

Lutianus chrysotaenia (not Bleeker) Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1908, p. 243 (Zamboanga).

Depth 2½ to 2⅔; head 2½ to 2⅗, width 1⅘ to 2⅛. Snout 3 to 3¼ in head; eye 3⅓ to 4, 1 to 1⅓ in snout, greater than interorbital in young to subequal with age; maxillary reaches ¼ to ⅖ in eye, expansion 2 to 2⅖ in eye, length 2⅖ to 2½ in head; teeth in villiform bands in jaws of 3 or 4 irregular rows and outer enlarged row; 4 to 6 teeth in front of each jaw still slightly larger or canine like; band of villiform teeth across vomer and on each palatine, tongue edentulous; interorbital 4¼ to 4⅘, broadly convex; hind preopercle edge with 28 to 33 small denticles, then deep gash receiving strong, short, knob-like spine of subopercle, below 14 to 17 larger denticles on broad lobe. Gill rakers 7+15, of which 5 below rudiments; others lanceolate, equal gill filaments or 2½ in eye.

Scales 47 or 48 in lateral line to caudal base and 4 or 5 more on latter; 9 scales above lateral line, 17 or 18 below, 28 to 34 predorsal forward nearly to hind nostril, 12 to 14 rows on cheek. Suprascapula denticulated. Scales with 11 to 13 basal radiating striae; apical denticles 60 to 92, small, with 5 to 9 transverse series of basal elements; circuli fine.

D. X, 14, I, fourth spine $2\frac{3}{5}$ to $2\frac{1}{2}$ in head, first ray $3\frac{1}{10}$ to $3\frac{1}{8}$; A. III, 8, I, second spine $2\frac{2}{5}$ to $2\frac{2}{3}$, second ray $2\frac{2}{5}$ to $2\frac{2}{3}$; caudal $1\frac{1}{4}$ to $1\frac{1}{3}$, slightly emarginate behind, nearly truncate as widely expanded; least depth of caudal peduncle 3 to $3\frac{1}{8}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral $1\frac{2}{3}$ to $1\frac{3}{4}$.

Back dull brown, sides and below whitish with silver sheen. Dusky blotch at origin of pectoral rather triangular. A very indistinct or as faded deep brown diffuse rounded spot below soft dorsal origin on and close to lateral line, little less than eye in size. Fins pale brownish, paired ones and anal more whitish. Sides of head with drab or gray tints.

Philippines. My examples agree with the original description except they do not have teeth on the tongue. It says it is related to *Lutjanus russelli* (=*Lutjanus fulviflamma*), but it seems to me far closer to *Lutjanus vaigiensis*. It differs in the dark blotch on the back above the lateral line, the preopercle gash greatly deeper and with a strong knob-like spine usually projecting laterally, besides a dark triangular spot at the pectoral origin.

5181, 6720, 6721, 7584. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 183 to 200 mm.

15191. Busin Harbor, Burias Island. March, 1909. Length 210 mm.

11794, 11797. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 188 to 195 mm.

8719, 8720 [1172], 8721. Capulaan Bay, Pagbilao Island. February 24, 1909. Length 164 to 190 mm.

7609. Cebu market. April 6, 1908. Length 168 mm.

19712. Davao, Mindanao. April 16, 1908. Length 41 mm.

13188. Iloilo market. June 1, 1908. Length 148 mm.

4674. Limbones Cove, Luzon. January 14, 1908. Length 197 mm.

12420. Malabang market, Mindanao. May 22, 1908. Length 208 mm.

12343, 12344. Mansalay, Mindoro. June 4, 1906. Length 175 to 198 mm.

14226 to 14230. Mariveles wharf. January 30, 1909. Length 108 to 129 mm.

11426. Nogas Point, Panay. February 4, 1908. Length 78 mm.

Thirty-two examples. Philippines. Length 79 to 139 mm.

8348 [708]. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 128 mm.

7069. San Roque, Leyte. July 29, 1909. Length 66 mm.

21542. Subig Bay. January 7, 1908. Length 56 mm.

18949. Tulig, Lubang. July 15, 1908. Length 196 mm.

12863. Tifu Bay, Bouro Island, Dutch East Indies. December 10, 1909. Length 129 mm.

12890. Dodepo Island, Gulf of Tomini, Celebes. November 16, 1909. Length 178 mm.

13385. Labuandata Bay, Gulf of Boni, Celebes. December 18, 1909. Length 179 mm.
13658. Sadaa Island, Celebes. November 17, 1909. Length 187 mm.
58023 U.S.N.M. Zamboanga. Dr. E. L. Mearns. Length 258 to 268 mm. 2 examples. As *Lutianus chrysotaenia.*

Loxolutjanus, new subgenus[12]

Type.—Lutjanus erythropterus Bloch.

Diagnosis.—Differs from the other subgenera in the family in the rows of scales both above and below lateral line crossing in oblique series.

The usually accepted *Diacope* or *Genyoroge*, applied to this group, can not be used, as their genotypes fall with the group later named *Evoplites* by Gill.

LUTJANUS ERYTHROPTERUS Bloch

Lutjanus erythropterus Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, p. 115, pl. 249. Japan.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 679 (on Bloch).—Forster, Fauna Indica, 1795, p. 16.—Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 177, 206 (on Bloch).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 55 (part).—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 90 (Madagascar, Red Sea).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 277 (Vigan, Orion and Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 197 (part, not description from Bleeker); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong), p. 636 (Padang).—Tirant, Service Océanogr. Pêches Indo Chine, 6^e Note, 1929, p. 168.

Lutianus erythropterus Schneider, Syst. Ichth. Bloch, 1801, p. 325 (Japan).—Day, Fishes of India, pt. 1, 1875, p. 32, pl. 10, figs. 1–2 (type, Pondicherry, Madras).—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).—Jordan and Seale, Proc. U. S. Nat. Mus., vol. 29, 1906, p. 522 (Hong Kong).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 80 (San Fabian).—Seale, Philippine Journ. Science, vol. 5, No. 4, Oct. 1910, p. 275 (Sandakan).—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 11, pt. 2, 1911, p. 29 (Durban Bay).—Jordan and W. F. Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 453 (Fowler's Sumatra example; Manila).—McCulloch, Biol. Res. Endeavour, vol. 3, pt. 1, 1915, p. 141 (off Pine Peak, Queensland, in 24 to 26 fathoms).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 344 (references).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 151 (Ogasiworojima).—Malpas, Ceylon Administr. Report, 1921, p. E5.—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 658 (Natal).

Mesoprion erythropterus Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 478 (on Bloch).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1959, p. 205 (compiled).—Regan, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 330 (Persian Gulf).

Diacope sanguinea (Ehrenberg) Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 437. Massaua.—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 697 (type).

Mesoprion rubellus Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 475. Pondicherry; Red Sea.

---

[12] λοξός oblique; *Lutjanus;* with reference to the inclined rows of scales on the side of the body.

Diacope macrolepis (EHRENBERG) CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 475. Red Sea (name in text).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 703 (type).

Mesoprion annularis CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 484, Java; vol. 3, 1829, p. 497.—RICHARDSON, Ichth. China Japan, 1846, p. 229 (Canton).—CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 996 (Pinang, Singapore, Malay Peninsula).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 204 (China; Australia).—KNER, Reise Novara, Fische, 1865, p. 33 (Java, Singapore, Puynipet).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 17 (Mozambique).—MARTENS, Preuss. Exp. Ost Asien, 1876, p. 386 (Nagasaki Bay; Bangkok).—KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, 1879, p. 342 (Port Darwin).—GÜNTHER, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 38 (Arafura Sea).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Singapore; Canton).—KLUNZINGER, Fische Roth. Meer., 1884, p. 13.—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (Cebu).—GORGOZA, Anal. Soc. Españ Hist. Nat., Madrid, vol. 17, 1888, p. 282 (Cebu).—ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 467 (Cebu).—DUNCKER, Mitt. Naturh. Mus. Hamburg, vol. 21, 1903 (1904), p. 148 (compiled).—REGAN, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 330 (Persian Gulf).

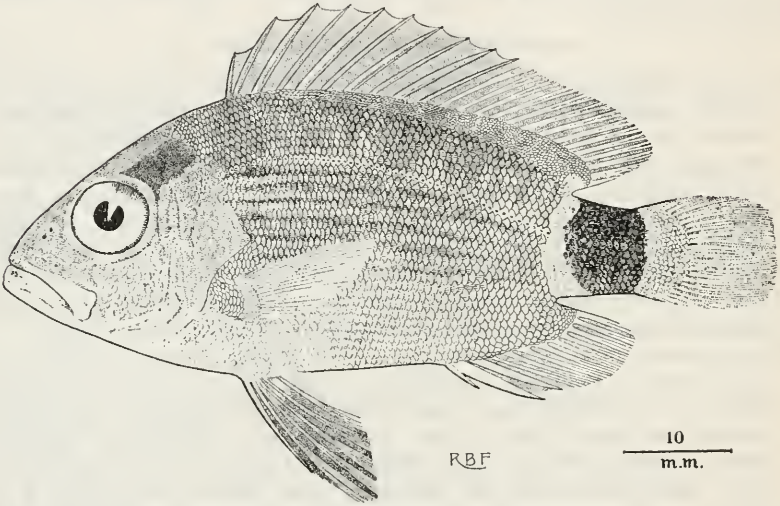

FIGURE 15.—LUTJANUS ERYTHOPTERUS BLOCH. YOUNG

Diacope annularis RÜPPELL, Atlas Reise Nördl. Afrika, Fische, 1828, p. 74 (Massaua).—QUOY and GAIMARD, Voy, Astrolabe, Zool., 1834, p. 666, pl. 5, fig. 4 (Sunda Straits).—RÜPPEL, Neue Wirbelth., Fische, 1835, p. 91, p. 24, fig. 2 (Massaua).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 697 (Koseir, Red Sea).

Lutjanus annularis BLEEKER, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 31 (Manila Bay).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 466, fig. 147 (Madras).—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 365 (Travancore).

Lutianus annularis JORDAN and SNYDER, Annot. Zool. Japan., vol. 3, 1901, p. 76 (Nagasaki).—SEALE, Philippine Jour. Sci., vol. 9, No. 1, 1914, p. 66 (Hong Kong).

Mesoprion chirtah Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 488 (on *Chirtah* Russell, Fishes of Coromandel, vol. 1, 1803, p. 74, pl. 93, Vizagapatam).—Day, Proc. Zool. Soc. London, 1868, p. 150 (Madras); 1869, p. 297 (Chanderpore); 1870, p. 680 (Andamans).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (North Celebes).—Boulenger, Proc. Zool. Soc. London, 1887, p. 655 (Muscat).

Lutjanus chirtah Bleeker, Atlas Ichth. Ind. Néerland, vol. 7, 1873–1876, pl. (23)301, fig. 1; vol. 8, 1876–1877. p. 58 (Sumatra, Nias, Pinang, Singapore, Bintang, Banka, Biliton, Java, Madura, Bali, Celebes, Batjan, Obi major, Amboina).

Lutjanus (Mesoprian) chirtah Zugmayer, Abhandl. K. Bayer, Akad. Wiss., Math.-phys. Klasse, vol. 26, 1913, p. 10 (Oman).

Lutianus chirtah Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 526 (Padang); Copeia, No. 58, June 18, 1918, p. 63 (Philippines).

Diacope erythrina Rüppell, Neue Wirbelth., Fische, 1835, p. 92, pl. 23, fig. 3. Massaua.—Martens, Verh. zool. bot. Ges. Wien, vol. 16, 1866, p. 378 (Egyptian coast Red Sea).—Klunzinger, Vehr. zool. bot. Ges. Wien, vol. 20, 1870, p. 702 (Red Sea).

Mesoprion erythrina Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 199 (compiled).

Mesoprion erythrinus Playfair, Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).

Diacope metallicus (Kuhl and Van Hasselt) Bleeker, Natuur. Geneesk. Arch. Nederland. Indië, vol. 2, 1845, p. 525. Batavia.

Diacopus adetii Castelnau, Proc. Zool. Acclimat. Soc., Victoria, vol. 2, 1873, p. 111. Noumea, New Caledonia.

Lutjanus adetii Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 197 (compiled).

Depth 2⅕ to 2⅓; head 2⅓ to 2⅔, width 2 to 2⅗. Snout 2⅘ to 3¾ in head from snout tip; eye 3⅕ to 5, 1 to 1¾ in snout, greater than snout in young, greater than interorbital in young to 1 to 1¼ with age; maxillary reaches eye or ¼ in eye with age, expansion 1⅛ to 2¾ in eye, length 2⅗ to 2⅔ in head; bands of villiform teeth in jaws, outer row enlarged with 6 front upper canine like; vomer and palatines with fine teeth; interorbital 4½ to 5⅖, convexly elevated; preopercle edge serrated, with slight emargination above angle around which serrae larger. Gill rakers 7+18, of which 5 above and 4 below rudimentary, lanceolate, equal gill filaments or ½ of eye.

Scales 50 to 62 in lateral line to caudal base; 12 or 13 scales above lateral line, 20 or 21 below, 17 to 19 predorsal, 7 rows on cheek; pores 46 to 50 in lateral line to caudal base. Scales with 12 to 17 basal radiating striae; apical denticles 51 to 85, with 4 to 6 transverse series of basal elements; circuli fine.

D. XI, 15, i, fifth spine 2⅓ to 2⅖ in total head length, first ray 2 to 2⅕; A. III, 9, i, third spine 2⅓ to 3, third ray 1⅘ to 1⅚; caudal 1⅓ to 1⅖, nearly truncate; least depth of caudal peduncle 2½ to 2⅞; pectoral 1¼ to 1⅖; ventral 1⅖ to 1½.

Pale olive brown above; sides and below rosy and silvery. Narrow oblique pale olivaceous lines obliquely up and many crossing lateral line to dorsal base, pale on lower side and under surface of body. Broad deep brown saddle-like blotch on caudal peduncle above and silvery white blotch in front and behind, but smaller. Dorsal edges dusky to blackish. Caudal brown, like dorsals and anal, also with narrow blackish edge. Pectoral pale yellowish, axil pale greenish. Ventral whitish, blackish terminally. Young in alcohol often darker, upper surface more or less dusky.

Red Sea, Arabia, Mozambique, Natal, Madagascar, Persian Gulf, India, Ceylon, Andamans, Pinang, Siam, Singapore, East Indies, Philippines, China, Japan, North Australia, Queensland, Melanesia. A handsome deep-bodied species, the young not greatly different from the adult.

21158. Jolo market. February 11, 1908. Length 190 mm.
20827, 20828. Lingayen Gulf, Luzon. May 11, 1909. Length 76 to 106 mm.
8732. Manila market. December 12 to 18, 1907. Length 118 mm.
10663. Manila market. June 17, 1908. Length 173 mm.
11451. Manila market. April 29, 1909. Length 202 mm.
21892. Port Jamelo, Luzon. July 12, 1908. Length 57 mm.
17555. Sorsogon market. March 12, 1909. Length 71 mm.
9047. Tacloban market. June 24, 1909. Length 290 mm.
A1022. Buka Buka Island, Gulf of Tomini, Celebes. November 20, 1909. Length 120 mm.
13194. Macassar market. December 22, 1909. Length 73 mm.
9961. Kowloon market, China. September 18, 1908. Length 160 mm.
20632. Kowloon market. September 26, 1908. Length 83 mm.
9747, 11659, 21599. Kowloon market. October 5, 1908. Length 84 to 142 mm.
6853. Kowloon market. October 22, 1909. Length 190 mm.
56079 U.S.N.M. San Fabian, Philippines. Bureau of Fisheries (3343). Length 146 mm.
56276 U.S.N.M. Manila. Dr. Lung. Length 75 to 101 mm. 2 examples.
58399 U.S.N.M. Hong Kong. P. L. Jouy. Length 41 mm.
72675 U.S.N.M. Java. Bryant and Palmer. Length 82 mm. As *Lutjanus chirtah*.
72676 U.S.N.M. Java. Bryant and Palmer. Length 165 to 169 mm. As *Lutjanus chirtah*.
75918 U.S.N.M. Japan? P. L. Jouy. Length 94 to 140 mm. 5 examples.

LUTJANUS GIBBUS (Forskål)

Sciaena gibba Forskål, Descript. Animal., 1775, pp. ix, 46. Arabia.—Bonnaterre, Tabl. Ichth., 1788, p. 123 (Red Sea).—Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 1300 (Arabia).—Walbaum, Artedi Pisc., vol. 3, 1792, p. 314 (on Forskål).

Lutianus gibbus Schneider, Syst. Ichth. Bloch, 1801, p. 326 (Red Sea).—Day, Fishes of India, pt. 1, 1875, p. 43, pl. 13, figs. 2–3.—Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 262 (Apia; Pago Pago); vol. 26, 1906 (1907), p. 20 (Cavite).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 80 (Bacon).—Seale and Bean, Proc. U. S. Nat. Mus., vol.

33, 1907, p. 243 (Zamboanga).—OGILBY, Ann. Queensland Mus., No. 9, pt. 1, 1908, p. 5 (Torres Group).—KENDALL and GOLDSBOROUGH, Mem. Mus. Comp. Zool., vol. 26, 1911, p. 286 (Fiji; Paumotus; Society Islands; Gilbert Islands; Marshalls).—PEARSON, Ceylon Administr. Report, 1915–18, p. F16.—JORDAN and STARKS, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 449 (Colombo, Ceylon).—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 655 (Mozambique).

Lutjanus gibbus LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, pp. 183, 219.—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 477.—STEINDACHNER, Abh. Senckenberg. Ges., vol. 25, 1900, p. 415 (Ternate).—PELLEGRIN, Annuario Mus. Zool. R. Universit. Napoli, n. s., vol. 3, No. 27, July 11, 1912, p. 5 (Massaoua).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 250 (Badjo Bay, Flores; Makassar; Manado; Biaru Island; Siau; Gisser; Elat, Kei Island; Buka and Pepela Bays, Rotti).—PEARSON, Ceylon Administr. Rept., 1912–1913, pt. 4, p. E15 (Gulf of Manaar); 1914, pt. 4, p. E5 (Gulf of Manaar).—SOUTHWELL, Ceylon Administr. Report, 1912–13, pp. E42, E51 (Ceylon Pearl banks).—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 117 (Ambon).—BAMBER, Journ. Linn. Soc., London, vol. 31, Zool., 1915, p. 480 (Sudanese Red Sea).—FOWLER, Bull. Bishop Mus., No. 22, 1925, p. 33 (Samoa); No. 38, 1927, p. 15 (Palmyra); Proc. Acad. Nat. Sci., Philadelphia, 1927, p. 277 (Santa Maria and Calapan, Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 200, pl. 18, fig. A (type of *Lutianus tahitiensis*, Tahiti, Faté, Shortland, Palmyra, Fanning, Apia, Makemo, Rangiroa, Arhno, Taritari, Suva, New Guinea, Ebon, Meos Bundi); Proc. Acad. Nat. Sci., Philadelphia, 1929, p. 636 (Apia, Faté, Tahiti).

Diacope gibba CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 438 (on FORSKÅL).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 693 (Koseir, Red Sea).

Genyoroge gibba GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 180 (compiled).—SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 37 (Tahiti).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 150 (Ceylon).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (Rubi, New Guinea).

Mesoprion gibbus GÜNTHER, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 12, pls. 12–13, fig. A (Samoa; Society Islands).—KLUNZINGER, Fische Roth, Meer., 1884, p. 12 (Djedda, Koseir).—PÖHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Tahiti).

Holocentrus boutton LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1803, pp. 331, 367. Moluccas.

Diacope bottonensis CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 434 (on LACÉPÈDE).—VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 535 (New Guinea).

Genyoroge bottonensis GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 181 (Amboina).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 16 (Zanzibar).—SCHMELTZ, Cat. Mus. Godeffroy, No. 3, 1866, p. 7 (Samoa); No. 4, 1869, p. 13 (Upolu); No. 7, 1879, p. 36 (South Sea Islands).—ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 465 (Luzon, Camarines Sur, Pasacao).

Genyoroge bostonensis PÖHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (South Seas). (Misprint.)

Genyoroge bottoniensis MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (North Celebes; Cebu).—GORGOZA, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 282 (Pasacao).

Mesoprion bottonensis KNER, Reise Novara, Fische, 1865, p. 32, pl. 2, fig. 3 (Madras).

Lutjanus bottonensis Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (37) 315, fig. 3; vol. 8, 1876–1877, p. 59 (Sumatra, Batu, Bali, Timor, Letti, Celebes, Buton, Sangir, Halmaheira, Ternate, Batjan, Obi major, Buru, Ceram, Amboina, Goram, Banda, Aru, New Guinea).

Diacope borensis Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 436. Borabora.

Mesoprion borensis Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 199 (compiled).

Diacope coccinea (Ehrenberg) Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 437. Massauah.—Rüppell, Neue Wirbelth., Fische, 1835, p. 91, pl. 23, fig. 2 (Djedda).—Peters, Archiv Naturg., 1855, p. 238 (Mozambique).

Diacope rosea Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 537. Ulea, Carolines.

Genyoroge rosea Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 180 (copied).

Mesoprion caudalis Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 537. Vanicolo.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 191 (copied).

Lutjanus caudalis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 202 (compiled).

Diacope tiea Lesson, Voy. Coquille, Zool., vol. 2, pt. 1. 1830, p. 231, pl. 23. Borabora.

Diacope melanura Rüppell, Neue Wirbelth., Fische, 1835. p. 92, pl. 23, fig. 1. Red Sea.—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20. 1870, p. 698 (Koseir, Red Sea).

Genyoroge melanura Günther, Cat. Fish. Brit. Mus., vol. 1, 1851, p. 183 (Red Sea).—Playfair, Fishes of Zanzibar, 1866, p. 16.—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 151 (Ceylon).

Mesoprion janthinurus Bleeker, Nat. Tijds. Nederland. Indië, vol. 6, 1854, p. 52 Sandangole, Halmaheira; Banda, Neira; Timor Kupang.

Genyoroge unicolor (not *Neomesoprion unicolor* Castelnau 1875) Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876 (1877) p. 266, pl. 4, fig. 1. Percy Islands.

Genyoroge bidens Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 230. New Guinea.

Mesoprion goldiei Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 233. New Guinea.

Lutianus tahitiensis Seale, Occas. Pap. Bishop Mus., vol. 4, No. 1, 1906, p. 40, fig. 13 (No. 1390). Tahiti.

Depth 2⅓ to 2⅗; head 2⅖ to 2⅔, width 1⅘ to 1⅖. Snout 2½ to 3½ in head; eye 3⅕ to 5⅓, 1 to 2⅛ in snout, 1 to 1¼ in interorbital, though greater than interorbital in young; maxillary reaches eye or 1⅛ in eye in young, expansion 1¾ to 2⅖ in eye, length 2⅗ to 2⅘ in head; lips moderate, coriaceous, teeth in villiform bands in jaws with outer enlarged row conic, of which 4 in front of each slightly canine like; triangular patch of villiform teeth on vomer and band on each palatine; hind nostril short oblique slit but little behind middle in snout length; interorbital 4½ to 5⅛, convex; hind preopercle edge deeply gashed with age, moderate in young, within which large bony subopercle knob, protuberant with age, and rounded edge below gash denticulated. Gill rakers 8+18, lanceolate, little longer than gill filaments or equal half of eye.

Scales 46 to 53 in lateral line to caudal base; 8 rows above, 17 or 18 below, 14 or 15 predorsal, 5 to 7 rows on cheek. Suprascapula denticulate. Scales with 12 to 14 basal radiating striae; apical denticles 95 to 140, with 4 to 14 transverse series of basal elements; circuli very fine.

D. X, 13, I, third spine 3 to 4 in head, eleventh ray 2⅘ to 3; A. III, 8, I, third spine 3¼ to 4, fifth ray 2⅖ to 2⅞; caudal 1⅕ to 1⅓, forked, each lobe rounded terminally with upper usually longer, emarginate in young; least depth of caudal peduncle 3⅒ to 3⅚; pectoral 1⅛ to 1¼; ventral 1⅘ to 1⅞.

Back olive brown, shading paler on sides to whitish below. Iris brownish yellow. Fins all brownish, membranes of dorsals darker and edge of soft dorsal very narrowly grayish. Caudal lobes deep brown, often paler terminally behind. Soft anal like soft dorsal. Pectoral with upper edge basally gray white narrowly and axil dusky.

Red Sea, Arabia, Zanzibar, Mozambique, India, Ceylon, East Indies, Philippines, Queensland, Melanesia, Micronesia, Polynesia. A very strongly marked species. The extremely gashed hind preopercle edge receives a large bony subopercular knob or projection, which is quite large in old examples. The back is greatly arched in profile forward and the upper caudal lobe with greatly branched rays, so that the whole lobe is conspicuously expanded with age. The scales on the side of the body course in oblique rows, crossing the lateral line to the profile above. The young have the caudal peduncle above and the entire caudal fin blackish, the line of demarcation sloping obliquely down on the side of the caudal peduncle to the beginning of the lower caudal lobe.

Although I thought *Diacope rosea* Valenciennes may be a synonym of *Lutjanus argentimaculatus* likely it had best be placed as a synonym of the present species, near which Günther placed it. The imperfect notice follows: D. XIII, 12. A. III, 8. Tuberosity of interopercle and preopercle emargination very conspicuous. Form of body like other species. Body rose or vermilion, head somewhat more colored. Dorsal orange, with blue spots. Anal and ventral blue. Length 231 mm.

Rüppell's figure of *Diacope melanura*, based on a young example, is somewhat crude as compared with Garrett's figures as reproduced by Günther. These visualize both the adult and young equally well.

My examples do not show the narrow dark longitudinal lines of Bleeker's figure of *Lutjanus bottonensis*. Bleeker shows the rows of scales also at variance, doubtless an oversight by the artist. Kner's figure of *Mesoprion bottonensis* shows the squamation much better, though its general appearance is that of a poorly preserved or partly dried out specimen.

Genyoroge unicolor Alleyne and Macleay, is both imperfectly noticed and as crudely figured, though may have been intended for this species:

Depth and head nearly equal or nearly ¼ of total (2¾ on figure). Eye 4 in head (4⅔ in figure). Preopercle finely serrated, notch small; interopercle ridge bluntly acuminated. Soft dorsal and anal not elevated behind, somewhat rounded. Caudal forked. Pectoral shown long as head. Uniform pale red.

The imperfectly described nominal *Mesoprion caudalis* Valenciennes may have been based on a young example of this species. It is said to have the preopercle gash deep and the caudal with a large violet triangle, enclosing yellowish white.

Diacope civis Valenciennes[13] is imperfectly described, and may be closely related or synonymous:

Upper front snout profile concave. Back elevated. Eye small. Interopercle spine strong, fits large preopercle gash. D. XI, 16, fin low. A. III, 8. Silvery reddish brown, without any brown spot on band. Below and on throat white. Fins red. Brown spot on soft dorsal and anal and 2 brown streaks on caudal. Length 433 mm.

13504, 17741 to 17743, 17763. Alimango Bay, Burias Island. May 5, 1909. Length 197 to 231 mm.

7822, 7830. Bugsuk Island. January 5, 1909. Length 323 to 402 mm.

12369. Candaraman Island, Balabac. January 14, 1909. Length 137 mm.

11696, 12089, 12090, Capunuypugan Point, Generale Island, Mindanao. Length 185 to 176 mm.

7738, 7739. Caxisigan Island, Balabac. January 2, 1909. Length 298 to 349 mm.

5385. Cebu market. April 6, 1908. Length 430 mm.

9208, 9209. Guntao Island. December 20, 1908. Length 158 to 160 mm.

8553. Hermana Mayor Island, Luzon. May 8, 1909. Length 290 mm.

5166. Iloilo market. June 1, 1908. Length 210 mm.

6360, 7127 to 7130, 9919 to 9922, 11087. Inamucan Bay, Mindanao. August 8, 1909. Length 128 to 158 mm.

A427. Jolo market. March 6, 1908. Length 148 mm.

20871. Jolo market. March 7, 1908. Length 135 mm.

10880. Limbones Cove, Luzon. February 8, 1909. Length 228 mm.

8316. Lode Bay, Destacado Island. March 13, 1909. Length 273 mm.

5872, 12419. Malabang market, Mindanao. May 22, 1908. Length 213 to 360 mm.

6175, 6176. Mansalay, Mindoro. June 4, 1908. Length 220 to 270 mm.

8589. Matnog Bay, Luzon. May 31, 1909. Length 253 mm.

6235, 6236. Medio Island, Galera Bay, Mindoro. June 9, 1908. Length 336 to 356 mm.

8964. Mompog Island. March 3, 1909. Length 310 mm.

One example. No data. Length 348 mm.

7940. Pagapas Bay, Luzon. February 20, 1909. Length 310 mm.

---

[13] Hist. Nat. Poiss., vol. 7, 1831, p. 444. Seychelles. *Genyoroge civis* GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 184 (copied).—PLAYFAIR, Proc. Zool. Soc. London, 1867, p. 849 (Seychelles).

10633 to 10635. Polloc, Mindanao. May 22, 1908. Length 102 to 130 mm. 7 examples. Most with oblique dusky or deep brown caudal peduncle.

7998. Port Banalacan, Marinduque. February 23, 1909. Length 316 mm.

8194. Port Busin, Burias Island. March 8, 1909. Length 264 mm.

20495. Port Galera. June 9, 1908. Length 98 mm.

6372 to 6374. Port Jamelo, Luzon. June 13, 1908. Length 138 to 327 mm.

6568. Port Maricaban, Luzon. July 21, 1908. Length 458 mm.

23474. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 71 mm.

6174, 6178, 6179, 6191, 6193, 6194, 7064, 7066, 7067, 8347, 11363, 11365, 15199, 17437, 17438. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 140 to 294 mm.

15400, 16880, 16881. Sablayan, Mindoro. December 12, 1908. Length 170 to 183 mm.

7065. San Roque, Leyte. July 29, 1909. Length 277 mm.

9780 [115], 9781. Siasi market. February 17, 1908. Length 119 to 130 mm. Ground color olive gray above, with pronounced olive stripes running obliquely upward from lateral line to base of dorsal, on lower edge of rows of scales; lower parts with pinkish oblique lines finer and of reddish cast; peduncle and base of caudal covered with dusky blotch; lower parts of head and breast white, with shades of pink; dorsal similar to body color, with colorless area through center of spinous membranes; margins of membranes beyond, as well as soft part, dark reddish brown; extreme tips of spines and rays pale. Caudal dusky at base, greater portion of fin yellowish, edges and margins orange, dusky and pale in notch. Anal pinkish, tips of first three rays white, under this brownish marginal blotch. Ventrals pink, tip of first ray white anteriorly, membranes brownish. Pectoral very pale orange, axil dusky orange. Iris silvery and golden.

21905. Tapiantana Island. September 13, 1909. Length 148 mm.

9519, 9520. Tara Island. December 15, 1908. Length 115 to 138 mm.

6434, 6449. Tilig. July 14, 1908. Length 295 to 298 mm.

18882, 18883. Tilig. July 15, 1908. Length 138 to 141 mm.

7793. Ulugan Bay, Palawan. December 29, 1908. Length 313 mm.

7125. West coast Palaui Island. November 18, 1908. Length 363 mm.

5988. Zamboanga market. May 26, 1908. Length 410 mm.

21321. Uki, Bouro Island. December 9, 1909. Length 71 mm.

A1075. Maitara Island, Gillolo. November 26, 1909. Length 334 mm. Vermilion with orange shades under spine and over base of pectoral; some olive on base of spinous dorsal, naked fin dusky, soft part with white tip to fourth or last ray; caudal dusky vermilion, narrowly white in fork; anal bright vermilion, anteriorly white tipped; paired fins vermilion and membranes with dark overshade.

30539 U.S.N.M. New Guinea. Australian Museum. Length 238 to 280 mm. 2 examples.

32742 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 143 mm. As *Lutjanus butonensis*.

34796 U.S.N.M. Tahiti. Dr. W. H. Jones. Length 158 mm.

39843 U.S.N.M. Apiang. Museum Comparative Zoölogy. Length 200 mm. As *Genyoroge rivulata*.

52490 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 157 to 225 mm. 6 examples.

56182 U.S.N.M. Luzon. Bureau of Fisheries. Length 128 mm.

58014 U.S.N.M. Zamboanga. Dr. E. A. Mearns. August, 1906. Length 480 mm.

58024 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 180 to 185 mm. 2 examples.

65930 U.S.N.M. Makemo, Tuamotos. *Albatross* Collection, 1899–1900. Length 380 mm.

65931 U.S.N.M. Rangiroa, Tuamotos, *Albatross* Collection, 1899–1900. Length 370 mm.

65932 U.S.N.M. Arnho Atoll, Marshalls. *Albatross* Collection, 1899–1900. Length 329 to 349 mm. 2 examples.

65933 U.S.N.M. Tari Tari. *Albatross* Collection, 1899–1900. Length 243 mm.

65934 U.S.N.M. Suva, Fiji. *Albatross* Collection, 1899–1900. Length 120 to 148 mm. 2 examples.

LUTJANUS MALABARICUS (Schneider)

Sparus malabaricus SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 278. Coromandel.

Mesoprion malabaricus CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 480 (Coromandel).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 204 (East Indies).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 11 (Cebu).—ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 467 (Luzon, Manila).

Lutianus malabaricus DAY, Fishes of India, pt. 1, 1875, p. 31, pl. 9, fig. 4 (Mekran).—JORDAN and SNYDER, Annot. Zool. Japon., 1901, p. 76 ("Japan").—FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527 (Padang).—SMITH and SEALE, Proc. Biol. Soc. Washington, vol. 19, 1906, p. 78 (Mindanao).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 81 (Bulan).

Lutjanus malabaricus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (15)293, fig. 1; vol. 8, 1876–1877, p. 61 (Java, Sumatra, Buru, Amboina, Timor).—PELLEGRIN, Annuario Mus. Zool. R. Universit. Napoli, n. s., vol. 3, No. 27, July 11, 1912, p. 5 (Massaoua).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 30 (Takao).—FOWLER, Proc. Acad. Nat. Sci., Philadelphia, 1929, p. 608 (Hong Kong), p. 636 (Padang).

Diacope timoriensis QUOY and GAIMARD, Voy. Uranie, Zool., Dec. 18, 1824, p. 306, pl. 57, fig. 1. Coast of Coupang, Timor.

Mesoprion timoriensis GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 205 (copied).

Lutianus timoriensis JORDAN and SNYDER, Annot. Zool. Japon., 1901, p. 76 ("Japan").

Diacope calveti (QUOY and GAIMARD) CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 429. Timor.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 95 (not pl. 12, fig. 1–*a*) (type).

Mesoprion dodecacanthus BLEEKER, Nat. Tijds. Nederland. Indië, vol. 4, 1853, p. 104. Amboina.—GÜNTHER, Cat. Fish. Mus., vol. 1, 1859, p. 206 (copied).

Mesoprion dodecanthus MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (Kordo, Mysore).

Lutianus dodecacanthus DAY, Fishes of India, pt. 1, 1875, p. 33, pl. 10, fig. 3 (Madras).—PEARSON, Ceylon Administr. Report, 1915–1918, p. F11.—MALPAS, Ceylon Administr. Report, 1921, pp. E5–E7.—PEARSON, Ceylon Administr. Report, 1922, p. F6.

Lutjanus dodecacanthus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (24) 302, fig. 2 (Amboina).—DAY, Fauna Brit. India, Fishes, vol. 2, 1889, p. 467.

Mesoprion dodecacanthoides BLEEKER, Nat. Tijds. Nederland. Indië, vol. 6, 1854, p. 489. Amboina.

Lutjanus dodecacanthoides BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (18) 296, fig. 2; vol. 8, 1876–1877, p. 60 (Sumbawa, Amboina).

Lutianus dodecanthoides JORDAN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 20 (Manila).

Depth 2⅛ to 2⅓; head 2⅗ to 2¾, width 2⅛ to 2½. Snout 2⅘ to 3 in head from snout tip; eye 4 to 4½, 1⅕ to 1⅔ in snout, greater than interorbital in young to 1⅛ with age; maxillary reaches ⅕ to ¼ in eye in young or to eye with age, expansion 1⅔ to 2¼ in eye, length 2½ to 2⅔ in head from snout tip; teeth in narrow villiform bands in jaws, with outer row moderately enlarged, conic, curved; pair slightly enlarged as front canines and lateral mandibulars, scarcely larger than others; crescentic band of villiform teeth on vomer and short band on each palatine, tongue smooth; interorbital 4⅕ to 5, convexly elevated; preopercle edge finely denticulate, scarcely emarginate above angle. Gill rakers 5+14, lanceolate, of which 4 as rudiments above; others equal gill filaments or 1⅔ in eye.

Scales 49 to 52 in lateral line to caudal base and 7 or 8 more on latter; 10 to 12 scales above lateral line, 18 to 22 below, 15 or 16 predorsal forward to occiput, 7 rows on cheek. Suprascapula entire. Scales with 16 to 19 basal radiating striae; apical denticles 72 to 85; circuli fine.

D. X or XI, 14, I, fourth spine 2⅓ to 2½ in total head length, ninth ray 1⅞ to 2; A. III, 9, I, third spine 2¾ to 3⅛, fourth ray 1⅞ to 2⅛; caudal 1⅛ to 1⅕, slightly emarginate; least depth of caudal peduncle 2½ to 2⅗; pectoral 1 to 1⅕; ventral 1⅖ to 1⅔.

Back brown, lower side and under surface whitish. Each row of scales with slightly darker median line, following in oblique lines to cross lateral line. Fins all dull brown. Pale spot on caudal peduncle above followed by dark saddlelike blotch. Iris yellowish brown.

India, East Indies, Philippines, Formosa, Japan? A deep-bodied species with caudal nearly truncate and soft dorsal and anal pointed. Bleeker gives the maximum length as 480 mm.

Diacope timoriensis Quoy and Gaimard is without the dark pale-bordered saddle on the caudal peduncle above and the preopercle is shown with only a slight emargination.

Diacope calveti as figured by Sauvage, from an example 325 mm. long obtained by Dussumier, belongs to another species. It is shown with a deep preopercular notch, bony process opposite; scales in oblique rows above lateral line, horizontal rows below; soft dorsal and anal rounded.

5591. Batangas market. June 7, 1908. Length 165 mm.

5846, 5847. Cotabato market. May 20, 1908. Length 265 to 353 mm. [5846]. Oblique lines above more or less dusky. Soft dorsal and caudal edged with blackish, anal with white. Pectoral axil dark. Ventral fronts white. [5847]. General color red, as spots on scales above giving rise to oblique lines; below color on base and margin of scales, central portion more or less silvery; dorsal and caudal red, somewhat dusky on the soft tip; anal bright red; ventral pale red; pectoral yellowish.

5266. Dagupan, Luzon. March 19, 1908. Length 215 mm.

6096. Iloilo market. May 31, 1908. Length 329 mm. Silvery, with crimson showing traces of bronze lines above lateral line on oblique rows of scales. Iris like side of head. Inside mouth orange. Fins crimson, brightest terminally. Edges of soft vertical fins and ventrals narrowly black; tips of first 2 anal rays white. Pectoral pale crimson.

5875. Malabang market. May 22, 1908. Length 333 mm. General color red, most pronounced at bases of scales, becoming more or less silvery on sides of head and lower part of body. Iris silvery and red, slight yellowish shades above. Preorbital and snout probably washed with yellow. Upper edge of dorsal, tips of caudal black. Pectoral axil dusky. Ventral membranes clear, rays pale, fin otherwise body color.

5700. Manila market. May 2, 1908. Length 340 mm.

6305. Manila market. June 17, 1908. Length 305 mm.

6758, 6759, 6765, 6766, 6767. Manila market. April 21, 1909. Length 245 to 427 mm. Nearly clear red, bases of scales colored, marginal portions very silvery. Little trace of brownish lines above lateral line. Top of caudal peduncle dusky. Smaller examples show anal and caudal white and dusky marking behind last dorsal ray and brownish lines on scale rows. Others with caudal base pale, edge blackish, also edge of dorsal and anal and ventrals terminally.

9045, 9046. Tacloban market. July 25, 1909. Length 218 to 242 mm .

9112, 9113 [D. 5478]. Tacbuc, Leyte. July 29, 1909. Length 215 to 287 mm.

5112. Sandakan market, Borneo. March 4, 1908. Length 255 mm.

56052 U.S.N.M. Bulan. Bureau of Fisheries (4006). Length 44 mm.

56322 U.S.N.M. Manila. Dr. G. A. Lung. Length 185 mm. As *Lutjanus dodeacanthus.*

76620 U.S.N.M. Takao, Formosa. Dr. F. Baker. Length 260 mm.

27600 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 208 mm. When fresh in arrack rich warm brown, with yellowish olive tinge. Body below, sides below lateral line, together with head, rich rosy. Darker colored lines than body color extend obliquely upward and backward to cross lateral line, though below somewhat paler. Deep brown blotch or saddle on caudal peduncle above, tinged pink in front and behind to form 2 other pale saddle-like blotches. Vertical fins edged deep gray black, bases with dirty yellowish tinge. Pectoral dull yellowish. Ventral gray on outer portion.

LUTJANUS SEBAE (Cuvier)

Diacope sebae CUVIER, Hist. Nat. Poiss., vol. 2, 1828, p. 411. Waigiu; Pondicherry; Java.—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 692 (Koseir, Red Sea).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 78 (Bulan).—SEALE and BEAN, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).

Diacope seboe GUICHENOT, Notes Ile Réunion, vol. 2, 1862, p. 23.

Genyoroge sebae GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 176 (India, Louisiades, Amboina, Mozambique).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 15 (Aden; Zanzibar); Proc. Zool. Soc. London, 1867, p. 848 (Seychelles).—ALLEYNE and MACLEAY, Proc. Linn. Soc. New South Wales, vol. 1, 1877, p. 265 (Percy Islands).—MEYER, Anal Soc. Españ. Hist. Nat., Madrid, vol. 15, 1885, p. 6 (Macassar, Celebes; Rubi, New Guinea).—KENT, Great Barrier Reef, 1893, p. 370 (Queensland).—ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 465 (Cebu).—STEAD, Fishes of Australia, 1907, p. 262 (Queensland).

Lutjanus sebae BLEEKER, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 173 (Siam); Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 62, pl. (72)350, fig. 2 (Sumatra, Singapore, Biliton, Java, Bali, Celebes, Batjan, Amboina, Waigiu, New Guinea).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 465.—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 254 (Bawean).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 31 (Zamboanga).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 198 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 636 (Padang).

Lutianus sebae DAY, Fishes of India, pt. 1, 1875, p. 30, pl. 9, fig. 3 (Madras).—FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527 (Padang).—PEARSON, Ceylon Administr. Report, 1915–18, pp. F 15, F 17; 1925, p. F 14.—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 654 (Mozambique).

Mesoprion sebae KNER, Reise Novara, Fische, 1865, p. 30 (Java; Singapore).—KLUNZINGER, Fische Roth. Meer., 1884, p. 11.

Diacope siamensis VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 524. Gulf of Siam.

Depth 2 to 2¼; head 2⅖ to 2½, width 2¼ to 2⅗. Snout 2 to 2⅗ in head from snout tip; eye 4 to 5⅕, 1⅖ to 2⅕ in snout, greater than interorbital to 1⅕ with age; maxillary reaches eye, expansion 1½ to 2 in eye, length 2⅔ to 2⅘ in head from snout tip; narrow band of villiform teeth in each jaw, with outer row of sharp conic teeth, little enlarged in front and several on each side of mandible; broad angular band of villiform teeth on vomer, obsolete on palatines and tongue smooth; interorbitals 3⅞ to 5⅘, slightly convex, with broad median keel to occiput; preopercle edge serrated, with shallow notch below receiving small interopercle knob; about 78 fine denticles along hind preopercle edge and larger around corner. Gill rakers 6+12, compressed, lanceolate, equal gill filaments or little less than eye.

Scales 45 to 49 in lateral line to caudal base and 6 or 7 more on latter; 10 or 11 scales above lateral line, 19 or 20 below, 12 predorsal forward to occiput, 6 rows on cheek to preopercle ridge. Scales with 12 or 13 basal radiating striae; apical denticles 50 to 60, with 4 or 5 transverse series of basal elements; circuli fine.

D. XI, 15, I, third spine 2 to 2⅖ in head, seventh ray 1⅕ to 1⅘; A. III, 9, I, second spine 3¼ to 3½, fifth ray 1⅓ to 1¾; caudal 1¼ to 1⅓, emarginate; least depth of caudal peduncle 2⅞ to 3¼; pectoral 1⅕ to 1¼; ventral 1⅖ to 1⅗.

Light brown to whitish generally, each scale on body with small white spot. Broad dark brown band from side of snout, wide as eye, to occiput or just before spinous dorsal. Second broader dark brown band from middle of spinous dorsal down and expanding below to embrace abdomen. Third dark brown band from entire front of soft dorsal and last dorsal spines down and arching back and obliquely on caudal peduncle along lower caudal lobe to its tip; caudal lobes terminally dusky. Lower anal edge dusky. Ventral largely dusky, especially terminally.

Red Sea, Arabia, Zanzibar, Mozambique, Réunion, India, Siam, Singapore, East Indies, Philippines, Queensland, Melanesia. A very handsome species with striking color pattern. Bleeker gives the maximum of 14 examples as 260 mm. The dark bands are relatively much wider in the young.

Russell's *Botlawoo champa*[14] is a good representation of this fish. He gives its length as 280 mm. *Diacope siamensis* Valenciennes is described with D. XI, 10; A. III, 11; length 305 mm.

5151, 7305. Jolo market. March 6, 1908. Length 144 to 174 mm.

56229 U.S.N.M. Luzon. Bureau of Fisheries. Length 118 mm.

58019 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 240 to 305 mm. 2 examples.

84256 U.S.N.M. Zamboanga. Dr. F. Baker. Length 220 mm.

27601 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 143 mm. When fresh in arrack with rosy pink. Broad deep brown band from occiput, through eye and along side of snout to front of maxillary; frontal space of general rosy pink like general body color. Another band across body from spinous dorsal in front, extends across fin to ventrals. Another also from spinous dorsal posteriorly down, back and obliquely across side of caudal peduncle out over lower caudal lobe till including brown outer rays at their tips. Abdomen and space between paired fins deep brown. Each scale of body marked with pink spot, forming striped appearance; stripes all slightly oblique, due to following in scale courses. Chest, cheek, and lower surface of head rosy pink, though scales without brighter spots or centers. Front half of soft dorsal and anal blackish brown. Dark or blackish brown blotch on outer end of upper caudal lobe and deep brown at fin base above. End of upper caudal lobe and narrow edge of lower one below pink. Pectoral axil brown, basal parts of rays orange, rest of fin rosy pink. Ventral pink basally, blackish terminally.

Genus MACOLOR Bleeker

Macolor Bleeker, Act. Soc. Sci. Ind. Néerland. (Celebes), vol. 8, 1860, p. 25. Type *Macolor typus* Bleeker=*Diacope macolor* Cuvier, tautotypic.

Promblys Gill, Proc. Acad, Nat. Sci. Philadelphia, 1862, p. 236. Type *Diacope nigra* Lesson, monotypic.

Body deep, well compressed, back elevated. Head large, obtuse in profile. Snout rather short. Eye large, high. Mouth large, jaws nearly equal or lower slightly protruded. Canines small, largely concealed in thick coriaceous lips, as 4 above and 6 below, of which former usually larger and all directed forward. Vomer and palatines with narrow band of fine teeth. Pair of small wide-set nostrils each side of snout. Preopercle with deep gash, receives strong, interopercular spine. Squamation of head not extending forward of occiput. Scales all finely ctenoid, largely in slightly oblique series, become more horizontal below lateral line or axial line of body. Fins all with fine scales, at least basally. Dorsal with 10 spines, soft fin well pointed behind. Anal with 3 spines, soft fin like soft dorsal, with 10 branched rays. Caudal emarginate, lobes wide. Pectoral very long. Ventral shorter, not quite reaching anal.

---

[14] Fishes of Coromandel, vol. 1, 1803, p. 77, pl. 99. Vizagapatam.

This genus, associated with *Lutjanus* Bloch, is distinguished chiefly by its fine, long, numerous gill rakers, to the number of 75 on the lower branch of the first arch. It is further characterized by the deep preopercular gash receiving an interopercular spine, which is directed forward. Also the small front canines of each jaw are directed forward.

ANALYSIS OF SPECIES

*a*¹. Coloration greatly contrasted, back blackish brown with several white blotches; head whitish, with end of muzzle and broad vertical band wide as eye blackish; lower half of body whitish, except blackish longitudinal band from pectoral axil back through middle of tail; fins largely blackish -- niger.

*a*². Dark brown, most every scale with gray or blue spot, edged darker, on head often forming vermiculations; fins largely dusky brown -------- macularis.

MACOLOR NIGER (Forskål)

Sciaena nigra Forskål, Descript. Animal., 1775, pp. xi, 47. Djedda, Red Sea.—Bonnaterre, Tabl. Ichth., 1788, p. 123 (Red Sea).—Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 1300 (Arabia).—Walbaum, Artedi Pisc., vol. 3, 1792, p. 308 (on Forskål).

Lutianus niger Schneider, Syst. Ichth. Bloch, 1801, p. 326 (Arabia).

Lutjanus nigra Day, Fishes of India, Suppl., 1888, p. 783 (Maldives).

Lutjanus niger Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 405.—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 253, pl. 12, figs. 1–2 (Binongka; Banda).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 203 (compiled).

Diacope nigra Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p.. 431 (on Forskål).—Rüppell, Neue Wirbelth., Fische, 1835, p. 93, pl. 24, fig. (Djedda).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 696 (Koseir, Red Sea).

Genyoroge nigra Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 176 (Red Sea).—Lunel, Mem. Soc. Phys. Hist. Nat. Genéve, vol. 27, 1881. p. 270 (Mauritius).

Mesoprion niger Klunzinger, Fische Roth. Meer., 1884, p. 11 (Koseir).

Diacope macolor Lesson, Bull. Sci. Nat. Férussac, vol. 12, 1827, p. 138. New Guinea.—Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 415 (New Guinea).—Lesson, Mem. Soc. Hist. Nat. Paris, vol. 4, 1828, p. 409 (Dorcy Harbor, New Guinea); Voy. Coquille, Zool., vol. 2, pt. Nov. 12, 1831, p. 230, pl. 22, fig. 2 (Dorey Harbor).

Genyoroge macolor Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 170 (Molucca Sea; Amboina).—Playfair, Fishes of Zanzibar, 1866, p. 14 (Zanzibar; Aden).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Kandavu); No. 7, 1879, p. 37 (Viti and Pelew Islands).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 26 (Pelew Islands).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 10 (North Celebes; Tabukan, Sangi).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 465 (Cebu; Samar; Borongun).

Mesoprion macolor Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 11 (Samoa).

Lutjanus macolor Bleeker, Atlas, Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 75, pl. (65) 343, fig. 3 (Celebes, Buru, Ternate, Amboina, Haruko, Banda, Waigiu, New Guinea).

Macolor typus Bleeker, Nederland. Tijdschr. Dierk., vol. 2, 1867, p. 277. Amboina.

Depth 2¼ to 2⅖; head 2⅗ to 2⅔, width 2⅛ to 2⅓. Snout 2⅘ to 2¾ in head from snout tip; eye 3¾ to 4⅗, 1 to 1½ in snout, 1 to 1⅗ in interorbital; maxillary reaches ⅖ to ½ in eye, expansion 2 to 2⅖ in eye, length 2⅛ to 2½ in head from snout tip; teeth villiform, in bands in jaws of about 7 irregular rows, outer row of slightly enlarged teeth of which only tips project through thick coriaceous lips with 4 above and 6 below as slight canines, all directed slightly outward; narrow band of small teeth on vomer forming wide angle, also narrow band on each palatine and tongue smooth; interorbital 2⅗ to 3⅖ in head, broadly convex; preopercle with deep gash receiving interopercular spine, hind edge finely serrate and corner with slightly enlarged denticles. Gill rakers 40+75, compressed, nearly long as snout; gill filaments 3⅓ in gill rakers.

Scales 52 or 53 in lateral line to caudal base and 5 or 6 more on latter; 9 scales above lateral line, 19 or 20 below, 23 or 24 predorsal, 6 rows on cheek. Suprascapula weakly denticulate. Scales with 11 to 15 basal radiating striae; apical denticles 92 to 120, with 3 to 14 transverse series of basal elements; circuli very fine.

D. X, 13, i, third spine 2¾ to 3 in total head length, seventh ray 1⅖ to 1⅗; A. III, 10, i, third spine 3, fifth ray 1⅖; caudal 1⅕ to 1¼, moderate, emarginate; least depth of caudal peduncle 2⅔ to 2⅘; ventral 1⅖ to 1⅗; pectoral 2⅗ to 2⅘ in combined head and body to caudal base.

Coloration in "analysis of species."

Red Sea, Arabia, Zanzibar, Mauritius, Maldives, East Indies, Philippines, Polynesia. A very striking and highly contrasted fish, well figured by Bleeker and Weber.

7686. Agojo Point, Catanduanes Island, Luzon. June 10, 1909. Length 185 mm.

6514, 12993. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 155 to 198 mm.

8072, 17766. Alimango Bay, Burias Island. March 5, 1909. Length 218 to 260 mm.

18999. Cagayan, Sulu. June 8, 1909. Length 190 mm.

7734. Caxisigan Island, Balabac. January 2, 1909. Length 265 mm.

7231. Masinloc Bay, Zambales. November 22, 1908. Length 290 mm.

8047, 15101, 15102. Mompog Island. March 3, 1909. Length 176 to 263 mm.

12564, 17322. Near Palag Bay, Luzon. June 16, 1909. Length 197 to 223 mm.

7946. Pagapas Bay, Luzon. February 20, 1909. Length 255 mm.

15515. Palag Bay, Luzon. June 16, 1909. Length 228 mm.

6369. Port Jamelo. July 13, 1908. Length 174 mm.

13274. Rapurapu Island, Luzon. June 22, 1909. Length 155 mm.

14793. Sablayan, Mindoro. December 12, 1908. Length 188 mm.
4644. Tambun Sigambul, Tonquil Island. September 14, 1909. Length 200 mm.
4977. Tataan Island, Tawi Tawi Group. February 21, 1908. Length 214 mm.
6433. Tilig. July 14, 1908. Length 233 mm.
13124. Powati Harbor, Makyan Island. November 28, 1909. Length 133 mm.
19800. Makyan Island. November 29, 1909. Length 140 mm.

MACOLOR MACULARIS, new species

Depth 2⅕ to 2⅖; head 2⅗ to 2⅔, width 2 to 2⅛. Snout 2½ to 3⅗ in head from snout tip; eye 3⅖ to 5¼, 1⅕ to 2 in snout, 1⅓ to 2⅛ in interorbital; maxillary reaches ¼ to ⅖ in eye, length 2⅕ to 2¼ in head from snout tip; teeth fine, in 7 or 8 irregular little defined rows in jaws, though all more or less concealed in coriaceous lips; outermost row of teeth in each jaw little larger than any of others and with age directed outward, though basally also largely concealed by thick lips; small patch of fine teeth on vomer and narrow band on each palatine; interorbital 2⅖ to 2⅘, convex; preopercle with obsolete and minute serrae, deep narrowly triangular gash above corner at hind edge. Gill rakers 31 to 40+63 to 75, very fine, compressed, elongate, 1⅓ in snout; gill filaments ½ of gill rakers.

Scales 52 or 53 along above lateral line to caudal base and 13? more on latter; tubular scales 47 or 48 in lateral line to caudal base; 9 or 10 scales above lateral line, 20 or 21 below, 22 to 24 predorsal forward to occiput, 7 or 8 rows across cheek. Scales with 11 to 21 basal radiating striae; apical denticles 92 to 135 weak obsolete points, with 6 to 14 transverse series of basal elements; circuli fine.

D. X, 11, i to 13, i, fourth spine 2¾ to 3 in total head length, seventh ray 1⅖ to 1⅗; A. III, 10, i, third spine 2⅞ to 3⅕, fifth ray 1⅖ to 1½; caudal 1⅕ to 1¼, moderately emarginate; least depth of caudal peduncle 2⅗ to 2⅘; ventral 1⅖ to 1¾; pectoral 2⅖ to 2⅘ in combined head and body to caudal base.

Back nearly burnt umber till level with eye, below paler or whitish. Each scale on back with pale gray white basal spot. Head paler or with drab shades on preorbital, cheek, and opercles, lower surfaces all dull brownish, everywhere variably small ocelli, sometimes as short bars or arcs, but always with slightly darker brown border; on front take form of transverse bluish lines, but no markings on under surface of head. Iris yellowish brown. Back with 3 or 4 series of underlaid pale ovoid spots. Spinous dorsal dusky, mottled with ill defined grayish basal spots. Soft dorsal dusky, with uniformly small grayish spots. Anal like soft dorsal. Caudal dusky, marked with gray spots. Paired fins brownish, dusky terminally. Small examples with paler longitudinal band, ill defined, reflected on caudal medially.

Diagnosis.—Known chiefly by its coloration, which generally dark brown, most every scale with pale spot, often forming vermiculations.

Type.—Cat. No. 89996, U.S.N.M.

8146. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 303 mm.
8084. Alimango Bay. March 5, 1909. Length 369 mm.
6507, 6508. Balikias Bay. July 17, 1908. Length 274 to 289 mm.
6249. Medio Island, Galera Bay, Mindoro. June 9, 1908. Length 35 mm.
8049. Mompog Island. March 3, 1909. Length 283 mm.
9292. Murcielagos Bay. August 9, 1909. Length 256 mm.
8886. Near Palag Bay, Luzon. June 16, 1909. Length 290 mm.
5881. Polloc, Mindanao. May 22, 1908. Length 318 mm.
7000, 7001. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 585 to 615 mm.
8209. Refugio Island, Pasacao, Ragay Gulf. March 9, 1909. Length 303 mm.
7334 to 7337. Tara Island. December 14, 1908. Length 268 to 432 mm.
6432, 6466, 6470. Tilig. July 14, 1908. Length 290 to 344 mm.
A469. Tulnalutan Island, east of Zamboanga. September 9, 1909. Length 583 mm.
6926, 6957. West coast of Sabtan Island. November 8, 1908. Length 332 to 408 mm. Scales on back and sides with indigo bar through center, edges yellowish, most pronounced below; breast and side of head bronzy; side of head with numerous slaty whitish spots on dorsal membrane, in about 2 series on spinous parts, 1 along base and 1 on the outer half; many obscure pale spots on caudal and anal; paired fins unmarked or with a few obscure spots on pectorals.
A1453. Cape Kait, Libani Bay, Celebes, Dutch East Indies. December 29, 1909. Length 420 mm.
A1074. Maitara Island. November 26, 1909. Length 407 mm. Ground color of head dark greenish olive, on forehead and snout becoming olive yellow, on cheeks and side vermiculations slaty; scales on back with dusky indigo centers, seal brown edges and narrow olive line between these colors; below lateral line blue changes to slate, then olive brown fading into dirty white; spinous dorsal membranes dusky olive with double row of whitish blotches; soft verticals blackish, abundantly spotted with whitish; paired fins dark brown, without spots; iris dusky and golden.
Also large head and vertebral column with fins, 552 mm. No data.

Genus APSILUS Valenciennes

Apsilus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 548. Type *Apsilus fuscus* Valenciennes, monotypic.

Body moderately long, compressed. Teeth in jaws all villiform, none canines, outer row little enlarged; palate and tongue with fine teeth, or absent from latter. Preopercle edge with serrae or entire. Lower gill rakers 10 to 17. Branchiostegals 7. Scales about 60 to 65 in lateral series. Soft dorsal and anal scaleless, caudal scaly. Dorsal single, edge continuous, with 10 spines and 10 rays. Anal with 3 spines and 8 rays. Last dorsal and anal rays not produced. Caudal lobes slightly longer than head. Pectoral moderate, equals head or less, not or quite reaching anal.

APSILUS FUSCUS Valenciennes

Apsilus fuscus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 549, pl. 168bis. Porto Praya, Cape Verde Islands.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 82 (compiled).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 24.—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 705 (Koseir, Red Sea).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 450 (Colombo, Ceylon).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 647 (Delagoa Bay).

Depth 3⅛; head 3¾. Snout 3¼ in head from snout tip; eye 3⅖, $1\frac{1}{10}$ in snout; maxillary reaches ⅕ in eye, expansion 2⅓ in eye, length 2⅘ in head from snout tip; teeth in villiform bands in jaws, without canines; teeth on vomer and palatines, none on tongue; interorbital elevated. Scales 65 in lateral line; 7 scales above lateral line, 17 below, predorsal about 21 forward to occiput or nearly opposite hind eye edge, 7 rows on cheek inclusive of preopercle flange.

D. X, 10, third spine 2 in total head length, first ray 3; A. III, 8, third spine 3½, first ray 3; least depth of caudal peduncle 2⅔; pectoral 1¼; ventral 1⅔; caudal 2½ in combined head and body to caudal base, deeply forked with long, slender pointed lobes. Brown, paler below. Dorsals with several ill-defined longitudinal darker streaks. Length 750 mm. (Valenciennes.)

Red Sea, Delagoa Bay, Reunion, Ceylon. Also in the Eastern Atlantic.

Genus TROPIDINIUS Poey

Tropidinius (Gill) Poey, Repert. Fisico Nat. Cuba, vol. 2, 1868, p. 296. Type *Mesoprion arnillo* Poey=*Apsilus dentatus* Guichenot, monotypic.

Rooseveltia (Jordan and Evermann) Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 265. Type *Serranus brighami* Seale=*Serranus zonatus* Valenciennes, monotypic.

Body compressed, rather deep. Head large. Mouth moderate. Maxillary long, reaches beyond front of pupil. Canines small. No teeth on tongue. Preopercle edge minutely denticulate. Gill rakers 5 to 7+12 to 13. Caudal lobes subequal, not ending in filaments. Pectoral longer than ventral, reaches anal.

TROPIDINIUS ZONATUS (Valenciennes)

Serranus zonatus Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 509. Mauritius.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 503 (compiled).

Anthias zonatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 503 (compiled).

Etelis zonatus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 109, pl. 11, fig. 3 (type; Madagascar).

Apsilus zonatus Fowler, Copeia, No. 142, May 20, 1925, p. 20 (note on Hawaiian example); Bull. Bishop Mus., No. 22, p. 26 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 192 (Honolulu, types of *Serranus brighami* and *Rooseveltia aloah*); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Honolulu).

Serranus telfairii Bennett, Proc. Comm. Zool. Soc. London, vol. 1, 1831, p. 127. Mauritius.

Serranus brighami Seale, Occas. Pap. Bishop Mus., vol. 1, No. 4, 1901, p. 7, fig. 3. Honolulu.

Aspilus brighami Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 452 (Honolulu).—Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 527 (Honolulu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 233, pl. 16 (Honolulu and Kailua).

Rooseveltia brighami Jordan and Snyder, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 213 (Honolulu).

Rooseveltia aloha Jordan and Snyder, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 212, fig. 3. Honolulu.

Depth 2⅔ to 2¾; head 2¾ to 2⅘, width 2⅕ to 2¼. Snout 3 to 3⅒ in head from snout tip; eye 3⅖ to 4⅛, 1¼ to 1½ in snout, greater than interorbital or 1⅒ in interorbital with age; maxillary reaches ⅖ in eye, expansion 2 to 2¼ in eye, length 2¼ to 2⅓ in head from snout tip; teeth fine, in bands in jaws, outer row little enlarged but not as prominent canines; band of small teeth across vomer and on each palatine; interorbital 4 to 4½, convex; preopercle edge minutely denticulate. Gill rakers 7+12, lanceolate, greater than gill filaments or ½ of eye; 5 above and 3 below rudimentary.

Scales 62 to 66 in lateral line to caudal base and 5 to 8 more on latter; 7 or 8 scales above lateral line, 16 or 17 below, 16 to 18 predorsal forward to occiput opposite hind eye edge, 6 or 7 rows on cheek to preopercle ridge. Suprascapula denticulate. Scales with 9 or 10 basal radiating striae; apical denticles 61 to 95, with 6 to 12 transverse series of basal elements; circuli fine.

D. X, 10, I, third spine 2⅔ to 2¾ in total head length, second ray 2¾ to 2⅘; A. III, 8, I, third spine 3⅕ to 3⅓, first ray 2⅔ to 2¾; caudal 1⅛ to 1⅕, deeply forked; least depth of caudal peduncle 2⅘ to 3; pectoral 1⅒ to 1⅛; ventral 1¼ to 1⅓.

Brown, paler to whitish below. Upper surface of head usually darker. Three dark oblique broad bands on back and upper sides, variably wider or narrower than pale interspaces. Fins all pale.

Mauritius, Madagascar, Hawaii. A very handsome species, largely yellow with three inclined red bands and head red. Reaches 450 mm.

52708 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 455 mm. As *Aspilus brighami.*

57784 U.S.N.M. Honolulu. Bureau of Fisheries 1909. Type of *Rooseveltia alohoa.*

62367 U.S.N.M. Honolulu. D. S. Jordan, 1908.

One example. A.N.S.P. Honolulu. Bishop Museum. Length 373 mm.

One example. A.N.S.P. Honolulu. Henry W. Fowler. Length 275 mm.

Genus APRION Valenciennes

Aprion Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 543. Type *Aprion virescens* Valenciennes, monotypic.

Sparopsis Kner, Sitz. Ber. Akad. Wiss. Wien, vol. 58, 1868, pp. 27, 302. Type *Sparopsis latifrons* Kner, monotypic.

Body slender, fusiform, well compressed. Head pointed, compressed. Snout conic. Eye small. Lower jaw slightly protrudes. Teeth in several rows in jaws, on vomer and palatines. Scales 50 to 60 in lateral series. Temporal region, jaws and opercles scaly, muzzle and maxillary scaleless. Dorsal, and anal scaleless, caudal covered with fine scales. Dorsal undivided, spines 10, rays 11 or 12, with last one elongated. Anal spines 3, rays 8 or 9 with last one elongated. Caudal lobes acute. Pectoral pointed, much smaller than ventral.

A single wide-ranging species of the Indo-Pacific.

APRION VIRESCENS Valenciennes

Aprion virescens Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 544, pl. 168. Seychelles.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 81 (compiled).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 24.—Playfair, Proc. Zool. Soc. London, 1867, p. 846 (Seychelles).—Günther, Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 16 (Society and Hawaiian Islands).—Lunel, Mém. Soc. Phys. Hist. Nat. Genève, vol. 27, 1881, p. 268 (Mauritius).—Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 452 (Honolulu).—Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 527 (Honolulu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 239, fig. 99 (Honolulu, Hilo, Kailua).—Weber, Siboga Exp. vol. 57, Fische, 1913, p. 257 (Sulu, Sulu Archipelago).—McCulloch, Biol. Res. Endeavour, vol. 3, pt. 3, Apr. 21, 1915, p. 143 (Gardner Bank, Queensland).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 450 (Colombo, Ceylon).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 193, pl. 16, fig. C (Honolulu, Hawaiian Islands); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Honolulu).

Aprion (*Aprion*) *virescens* Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1867–1877, p. 77 (Celebes, Ternate, Amboina).

Mesoprion microchir Bleeker, Nat. Tijds. Nederland. Indië, vol. 5, 1852, p 332. Amboina.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 186 (compiled).

Chaetopterus michochir Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (15) 293, fig. 3.

Sparopsis latifrons Kner, Sitz. Ber. Akad. Wiss. Wien, vol. 57, pt. 1, 1868, p. 27. Kandavu. Fiji.

Sparopsis elongatus Kner, Sitz. Ber. Akad. Wiss. Wien, vol. 57, pt. 1, 1868, p. 303, pl. 3, fig. 6 (same type as *Sparopsis latifrons*).

?*Aprion konekonis* Tanaka, Fishes of Japan, vol. 18, 1914, p. 300, pl. 82, fig. 27.

Depth 3¾ to 4; head 2⅞ to 3⅓, width 2⅕ to 2⅓. Snout 2⅓ to 2⅔ in head from snout tip; eye 4 to 5⅛, 1⅗ to 2¼ in snout, 1⅓ to 1⅘ in interorbital; maxillary not quite reaching eye or 1⅛ in eye, expansion 1¾ to 2 ⅓ in eye, length 2¼ to 2⅖ in head from snout tip; teeth in villiform bands in jaws, on vomer and palatines, tongue smooth; an outer enlarged series of teeth in each jaw as conspicuous canines all around, though anterior little largest; interorbital 3 to 3⅕, but little elevated and mostly level; preopercle entire. Gill rakers 6+14, lanceolate, little longer than gill filaments and 1⅗ in eye.

Scales 45 to 47 in lateral line to caudal base and 4 or 5 more on latter; 7 scales above lateral line, 14 or 15 below, 14 to 17 predorsal, 7 rows on cheek. Suprascapula entire. Scales with 14 basal radiating striae; apical denticles 73 short feeble points, with 8 to 10 transverse series of basal elements; circuli very fine.

D. X, 11, I, fifth spine 2⅔ to 2⅘ in total head length, last ray 3 to 3⅛; A. III, 8, I, third spine 4⅓ to 5, last ray 3 to 3⅛; caudal 1 to 1⅕, deeply forked; least depth of caudal peduncle 3⅞ to 4; pectoral 2⅕ to 2⅖; ventral 1⅔ to 1⅞.

Back brown, below paler to whitish. Iris light yellowish brown. Fins all brownish. Ventrals neutral gray terminally.

Réunion, Seychelles, Ceylon, East Indies, Philippines, Queensland, Polynesia, Hawaii. Known by its slender fusiform appearance, especially by the small pectoral much less than the ventral and large canine teeth in the outer series of the jaw.

A814. Galera Bay, Mindoro. October 27, 1909. Length 458 mm.

A532. Tambun Sigambul, Tonquil Island. September 14, 1909. Length 635 mm.

9395. Zamboanga market. September 7, 1909. Length 486 mm. Olive with purplish shade above, becoming white on breast and belly terminally, hyaline dusky with some olive shades in membranes and distinct blackish blotches at base of posterior spinous membranes; caudal similar to body; anal very pale purplish, with white areas on bases of spines and membranes; ventrals more or less purplish; pectorals dusky. Specimen taken in market does not show the brown shade of Bleeker's plate, true color probably olive.

52741 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 341 mm.

55168 U.S.N.M. Honolulu. *Albatross* Collection. Length 178 mm.

28195 A.N.S.P. Hawaiian Islands. Bureau of Fisheries (No. 05207). Length 240 mm.

Genus PRISTIPOMOIDES Bleeker

Pristipomoides Bleeker, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. (574) 575. Type *Pristipomoides typus* Bleeker, monotypic.

Chaetopterus (not Cuvier 1830) Schlegel, Fauna Japonica, Poiss., pts. 5–6, 1844, p. 78. Atypic. Type *Chaetopterus sieboldii* Bleeker.

Platyinius Gill, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 236. Type *Mesoprion vorax* Poey, monotypic.

Bowersia Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, 1902 (April 11, 1903), p. 182. Type *Bowersia violescens* Jordan and Evermann, designated by Jordan, Genera of Fishes, pt. 4, 1920, p. 504.

Ulaula Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 459. Type *Bowersia ulaula* Jordan and Evermann, orthotypic.

Body compressed, oblong or somewhat elongate. Head compressed, somewhat small. Eye large. Mouth moderate. Canines large or small in jaws, villiform teeth on vomer and palatines, sometimes on tongue. Preopercle finely and feebly serrate, with broad flange. Scales moderate or small. Jaws and front of head naked.

Dorsal and anal scaleless, caudal minutely scaled. Lateral line complete. Dorsal continuous, last ray extended like that of anal, spines 10. Anal with 3 spines and 8 rays. Caudal forked. Pectoral falcate, long as or longer than head, lower rays not extended. Ventral rather small.

Indo Pacific and West Indies.

ANALYSIS OF SPECIES

a^1. BOWERSIA. Scales 47 to 60 in lateral line to caudal base.
  b^1. Lower gill rakers 12 or 13............microdon.
  b^2. Lower gill rakers 15 or 16............argyrogrammicus.
a^2. PRISTIPOMOIDES. Scales 62 to 70 in lateral line to caudal base.
  c^1 Lower gill rakers 18 or 19............microlepis.
  c^2. Lower gill rakers 20 or 21............filamentosus.

Subgenus BOWERSIA Jordan and Evermann

Scales 47 to 60 in lateral line to caudal base.

PRISTIPOMOIDES MICRODON (Steindachner)

Aprion microdon STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, vol. 74, 1876, p. 206. Hawaiian Islands.

Apsilus microdon JENKINS, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 451 (Honolulu).—JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 234 (Honolulu, Hilo, Kailua).

Platyinius microdon SNYDER, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 527 (Honolulu).

Pristipomoides microdon FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Honolulu).

Aphareus roseus CASTELNAU, Proc. Linn. Soc. New South Wales, vol. 3, 1879, p. 373. Port Jackson.

Aprion roseus MCCULLOCH, Rec. Australian Mus., vol. 11, No. 7, Feb. 20, 1917, p. 173, pl. 30 (Byron Bay, New South Wales); Australian Zoologist, vol. 1, pt. 7, 1919, p. 56, pl. 23, fig. 203*a* (New South Wales).

Bowersia violescens JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 183 (Honolulu); vol. 23, pt. 1, 1903 (1905), p. 236, fig. 97 (Honolulu).—JORDAN and SNYDER, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 213 (Honolulu).

Platyinius amoenus SNYDER, Proc. U. S. Nat. Mus., vol. 40, 1911, p. 530. Naha, Okinawa; vol. 42, 1912, p. 498, pl. 63, fig. 3 (type).

Aprion microlepis (not BLEEKER) OGILBY, Mem. Queensland Mus., vol. 5, 1916, p. 182 (Moreton Bay).

Aprion pristipoma (not BLEEKER) (DE VIS) OGILBY, Mem. Queensland Mus., vol. 5, 1916, p. 182 (Moreton Bay example).

Pristipomoides sieboldii (not BLEEKER) FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 193 (Honolulu; type of *Bowersia violescens*).

Depth $2\frac{7}{8}$ to $3\frac{1}{8}$; head $2\frac{3}{5}$ to 3, width 2 to $2\frac{1}{5}$. Snout $2\frac{3}{4}$ to $3\frac{2}{5}$ in head from snout tip; eye $3\frac{1}{4}$ to $3\frac{7}{8}$, 1 to $1\frac{2}{5}$ in snout, greater than interorbital in young to subequal with age; maxillary reaches 1/3 in eye in young to front eye edge with age, expansion $1\frac{3}{4}$ to $2\frac{1}{5}$ in eye, length $2\frac{1}{4}$ to $2\frac{1}{3}$ in head from snout tip; teeth in jaws biserial, inner row irregular and minute, outer row larger and upper front pair as two slight canines; narrow bands of fine teeth on vomer and palatines; tongue apparently edentulous; interorbital 3⅘ to 4⅖, slightly elevated, level medially; preorbital width 1½ in eye; preopercle minutely and obscurely denticulated. Gill rakers 5+13, lanceolate, ¼ greater than gill filaments or 1⅗ in eye.

Scales 47 to 60 in lateral line to caudal base and 4 or 5 more on latter; 7 scales above lateral line, 14 to 16 below, 14 to 16 predorsal, 7 rows on cheek. Suprascapula denticulate. Scales with 9 to 12 basal radiating striae; apical denticles 72 to 90, minute, with 3 to 6 transverse series of basal elements; circuli very fine.

D. X, 11, fourth spine 2¼ to 3 in total head length, first ray 3⅕ to 3⅖, last ray 2 to 2⅞; A. III, 8, third spine 3⅘ to 4⅓, first ray 3½ to 3¾, last ray 2 to 3½; caudal 1 to 1¼, deeply forked, slender lobes pointed and upper longer; least depth of caudal peduncle 3¼ to 3⅘; pectoral 1⅛ to 1⅕; ventral 1⅓ to 1⅗.

Generally light brown, lower surface little paler. Body everywhere with more or less silvered tints. Scattered, small, irregular, dark spots on scales of back. Fins all dull brown. Iris light reddish brown.

Queensland, New South Wales, Hawaii. In my "Fishes of Oceania" I have wrongly included seven examples in the Bishop Museum described under *Pristipomoides sieboldii*, but they together with the type of *Bowersia violescens* belong with the present species. As McCulloch in his remarks under *Aprion roseus* says his specimens differ from *Aprion microlepis* Steindachner in the smaller eye and broader preorbital and that "these characters doubtless alter with age, and as my specimens are much larger than those described by Bleeker, they perhaps represent merely the adult form of the species." Though I can not deny his contention altogether it seems unlikely this is true. That his figure is like that of *Bowersia violescens* is certain. Unfortunately he does not give the gill rakers, though his other details are in agreement.

8403 [D. 5408]. Capitancillo Light, N. 25° W., 20.8 miles (10° 40′ 15″ N., 124° 15′ E.), between Cebu and Leyte. March 18, 1909. Length 261 mm.

2797. Philippines ? Length 261 mm.

0304. Zamboanga market. September 7, 1909. Length 408 mm.

50669 U.S.N.M. Honolulu. Bureau of Fisheries. Type of *Boweria violescens.*

51083 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 255 mm. As *Platyinius microdon.*

52686 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 230 mm. As *Platyinius microdon.*

52738 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 475? mm. As *Bowersia violescens.*

68231 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection. Length 260 mm. Type of *Platyinius amoenus.*

74602 U.S.N.M. Nafa, Okinawa. *Albatross* Collection. Length 253 and 254 mm. These and 68231 show a slightly longer eye, which about equals snout. Gill rakers 5+15, of which 4 or 5 rudiments above and below. Hawaiian examples have gill rakers 6 or 7+16 or 17.

PRISTIPOMOIDES ARGYROGRAMMICUS (Valenciennes)

Serranus argyrogrammicus Valenciennes, Hist. Nat. Poiss., vol. 8, 1831, p. 183. Mauritius.

Etelis argyrogrammicus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 107, pl. 10, figs. 3, *a–b* (type).

Diacope sparus Schlegel, Fauna Japonica, Poiss., pt. 1, 1842, p. 14. Japan.

Mesoprion sparus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 188 (copied).

Lutjanus sparus Bleeker, Nederland. Tijds. Dierk., vol. 4, 1872, p. (117) 150 (China).

Platyinius sparus Jordan and Evermann, Proc. U. S. Nat. Mus., vol. 25, 1903, p. 344, fig. 16 (Formosa).

Pristipomoides sparus Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 460, fig. 5 (copied).

Pristipomoides typus Bleeker, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. (574) 575. Siboga, Western Sumatra.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 380 (compiled).—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 150 (Singapore).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 192 (on Bleeker); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Padang).

Aprion typus Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527 (Padang).

Dentex pristipoma Bleeker, Nat. Tijds. Nederland. Indië, vol. 7, 1854, p. 246. Celebes.

Chaetopterus pristipoma Bleeker, Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, pl. 10.

Aprion (*Aprion*) *pristipoma* Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 79 (Sumatra, Celebes, New Guinea).

Aprion pristipoma Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (58) 336, fig. 3.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 8 (Kordo, Mysore).—Malpas, Ceylon Administr. Report, 1921, pp. E5–E8.—Deraniyagala, Ceylon Administr. Report, 1926, p. F18.—Pearson, Ceylon Administr. Report, 1926, pp. F26, F28.

Centropristis (*Aprion*) *pristipoma* Klunzinger, Fische Roth. Meer., 1884, p. 16.

Mesoprion dentex Bleeker, Act. Soc. Sci. Ind. Néerland. (Enumerat.), vol. 6, 1859, p. 20. Sumatra; Amboina=*Pristipomoides typus* Bleeker.

Lutjanus dentex Bleeker, Nederland. Tidjs. Dierk., vol. 2, 1865, p. 278 (Amboina).

Lutjanus zonatus (not Valenciennes) Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 103 (part).

Anthias zonatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 503 (part).

Mesoprion multidens Day, Proc. Zool. Soc. London, 1870, p. 680. Andaman Islands.

Anthias multidens Day, Fishes of India, pt. 1, 1875, p. 27, pl. 7, fig. 4.

Depth 3 to $3\frac{2}{5}$; head $2\frac{5}{6}$ to $3\frac{1}{5}$, width $1\frac{7}{8}$ to $2\frac{2}{5}$. Snout 3 to $3\frac{1}{5}$ in head from snout tip; eye $3\frac{1}{3}$ to $4\frac{1}{5}$, $1\frac{1}{10}$ to $1\frac{2}{5}$ in snout, little greater than interorbital in young to $1\frac{1}{2}$ with age; maxillary reaches $\frac{1}{6}$ to $\frac{2}{5}$ in eye, expansion $2\frac{1}{5}$ to $2\frac{2}{5}$ in eye, length $2\frac{2}{5}$ to $2\frac{2}{3}$ in head from snout tip; teeth fine, villiform, in narrow bands in jaws in 4 or 5 irregular series and outer enlarged row; young with distinct pair of wide-set canines in front of each jaw; triangular band of villiform teeth on vomer and band on each palatine, but tongue edentulous; interorbital 3 to 4, broadly convex, often flattened medially; infraorbital width at maxillary end 2 to 2⅛ in eye; preopercle edge minutely serrate, serrae little enlarged around angle. Gill rakers 7 or 8+15 or 16, lanceolate, slightly longer than gill filaments in young to 1⅛ in gill filaments with age or 1⅞ in eye.

Scales 47 to 57 in lateral line to caudal base and 4 to 6 more on latter; 7 scales above lateral line, 14 or 15 below, 13 to 17 predorsal, 7 rows on cheek. Suprascapula denticulate, or rough with age. Scales with 9 or 10 basal radiating striae; apical denticles 44 to 90, small, weak points, with 3 to 8 transverse series of basal elements; circuli very fine or minute.

D. X, 11, I, spines rather flexible, fourth 2¼ to 2⅖ in total head length, first ray 2⅞ to 3, last ray 1⅞ to 2; A. III, 8, I, third spine 3½ to 4⅛, first ray 3 to 3⅓, last ray 2 to 2¼, over twice length of penultimate ray; caudal 1⅛ with age, 2⅛ to 2⅖ in combined head and body in young, deeply forked; least depth of caudal peduncle 3 to 3⅛ in total head length; pectoral 1⅛ to 1⅕; ventral 1⅓ to 1⅖.

Largely pale brown to scarcely paler below. Under surfaces often glossed silvery white. Iris yellowish white to light brown. Fins all dull or pale brownish.

Mauritius, Andamans, Singapore, East Indies, Formosa, China, Japan. *Serranus argyrogrammicus* Valenciennes, as figured by Sauvage, seems to be the earliest notice of this species. Jordan and Evermann's figure of *Platyinius sparus* surely is the same as my Sumatra examples. Evidently the prolonged last dorsal ray has been broken and possibly the filament to the upper caudal lobe may also have been present as in my material. Bleeker's *Pristipomoides typus* is a synonym, likewise his *Dentex pristipoma* and *Mesoprion dentex*. *Mesoprion multidens* Day is another synonym.

27602, 27603 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 240 to 245 mm. When fresh in arrack rosy red, becoming silvery below. Lower parts and side of head silvery. Spinous dorsal tinged with pale greenish yellow and other fins all more or less pale. Base of caudal dull orange.

Subgenus PRISTIPOMOIDES Bleeker

Scales 62 to 70 in lateral line to caudal base.

PRISTIPOMOIDES MICROLEPIS (Bleeker)

Chaetopterus microlepis BLEEKER, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 3, 1869, p. 80. Amboina; Bourbon Island; Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, pl. 17, fig. 2.

Aprion (*Aprion*) *microlepis* BLEEKER, Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 26 (Amboina; Bourbon); Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 78 (Amboina).

Aprion microlepis BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (58) 336, fig. 5.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 502 (Hawaii).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 257 (Sulu, Sulu Archipelago; Banda).—OGILBY, Mem. Queensland Mus., vol. 5, 1916, p. 182 (Moreton Bay).—FOWLER, Copeia, No. 112, Nov. 20, 1922, p. 83 (Hawaii); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Hawaii).

Pristipomoides microlepis FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 192 (Hawaiian Islands).

Aprion brevirostris (CUVIER and VALENCIENNES) GUICHENOT, Notes Ile Réunion, vol. 2, 1862, p. 24 (name only).—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 109 (name in synonymy).

Etelis brevirostris VAILLANT, Bull. Soc. Philom. Paris, ser. 6, vol. 10, 1873, p. 15. Bourbon.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 109, pl. 10, fig. 2, *a–b* (type).

Arnillo auricilla JORDAN, EVERMANN, TANAKA, Proc. California Acad. Sci., ser. 4, vol. 16, 1927, p. 668, pl. 23, fig. 3 Honolulu.

Depth 3⅗; head $2\frac{9}{10}$, width 2⅕. Snout 3⅓ in head from snout tip; eye 3⅛, greater than snout or interorbital; maxillary reaches opposite front pupil edge, expansion 2¾ in eye, length 2⅖ in head from snout tip; bands of conic teeth in jaws, firmly erect, outer series enlarged and has 6 anterior canines in each; triangular patch of fine teeth on vomer and narrow band on each palatine; interorbital 3¾, nearly level; preopercle edge denticulate. Gill rakers 8+18, lanceolate, longer than gill filaments or ½ of eye.

Scales 62 in lateral line to caudal base and 3? more on latter; 9 scales above lateral line, 16 below, 18 predorsal forward to occiput, 6 rows on cheek. Suprascapula serrated. Scales with 7 to 9 basal radiating striae; apical denticles 49 to 52, with imperfect row of basal elements; circuli fine.

D. X, 10, I, third spine 2⅓ in total head length, second ray 3⅔; A. III, 8, third spine 3⅔, first ray 3¼; caudal 1⅕, deeply forked, lobes sharply pointed; least depth of caudal peduncle 3¾; pectoral 1½ ?; ventral 1¾.

Uniform brownish, with slight olive cast above, below and on sides lighter or with silvery tints. Eye pale. Fins all pale brownish.

Bourbon, East Indies, Philippines, Queensland, Hawaii. Bleeker describes it as rosy above, silvery rosy below. Head above and snout violaceous rosy. Iris yellow. Fins rosy or clear. Dorsal with median yellow longitudinal band and base between each spine and ray silvery or yellowish. Lateral line golden brownish. My description from a Hawaiian example in the Academy.

5256. San Fernando, Union Province, Luzon. March 17, 1908. Length 243 ? mm.
13290. A.N.S.P. Hawaiian Islands. Dr. J. K. Townsend. Length 152 mm.

PRISTIPOMOIDES FILAMENTOSUS (Valenciennes)

Serranus filamentosus VALENCIENNES, Hist. Nat. Poiss., vol. 6, 1830, p. 508. St. Denis, Bourbon; Mauritius.

Anthias filamentosus GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 502 (Mauritius, type of *Serranus mitis*).

Centropristis filamentosus Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 703 (Red Sea).

Centropristis (*Aprion*) *filamentosus* Klunzinger, Fische Roth. Meer., 1884, p. 16.

Etelis filamentosus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 108, pl. 11, figs. 2–2*a* (east Madagascar).

Aprion filamentosus Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, pt. 3, 1909, p. 226 (Durban); Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 345.

Pristipomoides filamentosus Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct., 1927, p. 648 (Natal).

Serranus mitis Bennett, Proc. Comm. Zool. Soc. London, vol. 1, p. 127. Mauritius.

Chaetopterus sieboldii Bleeker, Verh. Batav. Genootsch. (Japan), vol. 26, 1857, p. 20 (on *Chaetopterus* Schlegel, Fauna Japon., Poiss., pts. 5–6, 1844, p. 78, pl. 37, fig. 2, Japan).—Regan, Ann. Mag. Nat. Hist., ser. 7, vol. 16, 1905, p. 18 (Inland Sea of Japan).

Aprion sieboldii Jordan and Snyder, Annot. Zool. Japon., vol. 3, pts. 2–3, 1901, p. 76 (copied).

Pristipomoides sieboldii Jordan and Richardson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 462, fig. 6 (paratypes of *Bowersia ulaula*).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 151 (Boshiu).—Fowler, Bull. Bishop Mus., No. 22, 1925, p. 26 (Honolulu).—Fowler and Ball, Bull. Bishop Mus., No. 26, 1925, p. 14 (Johnston Island).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 193, pl. 16B (Honolulu, Johnston Island, type of *Bowersia ulaula* [not *Bowersia violescens*]); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Honolulu).

Ulaula sieboldii Jordan and Jordan, Mem. Carnegie Mus., No. 1, Dec., 1922, p. 49 (Hawaii).

Chaetopterus dubius Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 385 (on Schlegel, Fauna Japon., Poiss., pts. 5–6, 1844, p. 78, pl. 37, fig. 2, Japan).

Bowersia ulaula Jordan and Evermann, Bull. U. S. Fish. Comm., vol. 22, 1902 (1903), p. 183. Hilo, Hawaii; vol. 23, pt. 1, 1903 (1905), p. 237, fig. 98 (type).

Apsilus microdon (not Steindachner) Jordan and Snyder, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 213 (specimen from Fukaura, Japan).

Depth 3 to 3¼; head 3 to 3⅛, width 2. Snout 3⅓ to 3½ in head from snout tip; eye 3¾, 1⅒ to 1⅛ in snout, 1 to 1⅛ in interorbital; maxillary reaches to or ⅕ in eye, expansion 2⅖ to 2⅔ in eye, length 2⅔ to 2⅞ in head from snout tip; teeth villiform, in bands in jaws of 4 or 5 irregular series besides an outer enlarged series; vomer with broad diamond-like patch of villiform teeth, also broad patch on each palatine; interorbital 3⅓ to 3⅘, broadly and slightly convex; preopercle edge minutely denticulate and denticles little larger around corner; preopercle edge with marginal parallel ridges or flutings extending to serrae. Gill rakers 11+20, lanceolate, equal gill filaments or 1⅘ in eye.

Scales 62 to 66 in lateral line to caudal base and 4 or 5 more on latter; 7 or 8 scales above lateral line, 15 or 16 below, 18 to 20 predorsal, 6 or 7 rows on cheek. Suprascapula entire, with keels. Scales with 7 basal radiating striae; apical denticles 83 to 85, small, weak, with 2 to 9 transverse series of basal elements; circuli minute.

D. X, 11, I, third spine 2⅗ to 3 in total head length, last ray 2⅛ to 2⅓; A. III, 8, I, third spine 3⅖ to 4, last ray 2⅛ to 2⅕; caudal 1 to

1⅕, deeply forked; least depth of caudal peduncle 3⅖ to 3½; pectoral 1 to 1⅛; ventral 1⅖ to 1⅗.

Back light olivaceous to paler and whitish below, with silvery reflections. Iris light brownish. Dorsals and caudal very pale brownish, other fins whitish.

Red Sea, Natal, Bourbon, Mauritius, Madagascar, Japan, Hawaii. A species known by its narrow preorbital, the space from the angle of the maxillary to the lower eye edge being contained in the eye about 2½ times in my examples. It is well figured by Sauvage as *Etelis filamentosus* and Jordan and Evermann as *Bowersia ulaula.* The atypic *Chaetopterus* of Schlegel is figured with a very narrow preorbital and the last dorsal and anal ray elongated. Though the figure shows but 5 scales above the lateral line and 11 below, it has about 82+8 in its entire course, quite contrary to the statement in the description which gives 75. Schlegel thought the color uniform red in a fresh state and gives its length 381 mm. Regan notes an example 230 mm. from the Inland Sea of Japan with a narrow preorbital, 20 lower gill rakers and scales 72, with 8 above and 19 below. With these items as criteria I find nothing except the increased number of scales as distinctive characters for *Serranus filamentosus* Valenciennes, especially as figured by Sauvage. It is therefore extremely likely the nominal species with narrow preorbital, numerous gill rakers and rather small scales are really one and the same.

2797 D. 5353. Cape Melville Light, S. 85° E., 16.8 miles (7° 50′ 45″ N., 116° 43′ 15″ E.), Balabac Strait. January 1, 1909. Length 193 mm.

9381, 9382. Cebu market. September 1, 1909. Length 337 to 342 mm.

19959 U.S.N.M. Mauritius. Col. N. Pike. Length 195? to 248? mm. 4 examples.

50661 U.S.N.M. Hilo. Bureau of Fisheries. Length 361 mm. Type of *Bowersia ulaula.*

Genus ETELIS Cuvier

Etelis Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 127. Type *Etelis carbunculus* Cuvier, monotypic.

Eteles Swainson, Nat. Hist. Animals, Fishes, vol. 2, 1839, p. 202. Type *Etelis carbunculus* Cuvier, virtually as *Eteles* Swainson, simply different spelling for *Etelis* Cuvier.

Elastoma Swainson, Nat. Hist. Animals, Fishes, vol. 2, 1839, p. 202. Type *Serranus oculatus* Cuvier, monotypic.

Hesperanthias Lowe, Fishes of Madeira, 1843, p. 14. Type *Serranus oculatus* Cuvier, monotypic.

Macrops (not Wagler 1830) Duméril, Mem. Acad. Sci. Paris (Ichth. Analytique), vol. 27, pt. 1, 1856, p. 279. Type *Serranus aculeatus* Duméril= *Serranus oculatus* Cuvier, monotypic.

Etelides Jordan and J. C. Thompson, Bull. Bur. Fisher., vol. 24, 1905, p. 241. Type *Etelis aquilionaris* Goode and Bean, monotypic.

Etelinus (Jordan) Jordan and W. F. Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 465. Type *Etelis marshi* Jenkins, orthotypic.

Body usually slender, elongate, compressed. Back before dorsal broadly flattened to occiput. Eye large. Mouth moderate, lower jaw protruding. Maxillary without supplemental bone. Canines in upper jaw only, strong, sometimes absent; no teeth on pterygoids or tongue. Cranium wide, level. Preorbital narrow. No opercular spine. Gill rakers 10 to 15 on lower arch, long, slender. Branchiostegals 7. Scales large, above lateral line parallel with its course. Head naked above. Maxillary scaly or naked. Soft dorsal not scaly. Dorsal deeply notched or divided, rather short, spines 10, last ray prolonged, same also of last anal ray. Anal spines 3. Caudal deeply or moderately forked, upper lobe extended with age. Pectoral elongate, falcate, lower rays not extended.

ANALYSIS OF SPECIES

a^1. ETELINUS. Gill rakers 6+10 to 12; caudal moderately forked---------**marshi.**

a^2. ETELIS. Gill rakers 10 to 13+14 to 17; caudal deeply forked, lobes produced. **carbunculus.**

ETELIS MARSHI (Jenkins)

Eteliscus marshi JENKINS, Bull. U. S. Fish Comm., vol. 22, 1907 (1908), p. 452, fig. 21. Honolulu.

Etelis marshi JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 240, fig. 100, pl. 17 (Honolulu, Hilo, Kailua).—FOWLER, Bull. Bishop Mus., No. 22, 1925, p. 26 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 194, pl. 17B (Honolulu, type of *Eteliscus marshi*); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Honolulu).

Depth 3⅕ to 3⅖; head 3 to 3⅛, width 2. Snout 3⅖ to 3⅗ in head from snout tip; eye 3½ to 3¾, 1 to 1⅛ in snout, subequal to 1¾ in eye, length 1⅞ to 2⅔ in head from snout tip; bands of villiform teeth in jaws, outer row enlarged; band of strong small teeth across vomer and each palatine; interorbital 3⅕ to 3½, low, level; hind preopercle edge finely denticulate. Gill rakers 6+10, of which 3 to 5 above or below rudimentary, laneolate, subequal with gill filaments or less than ½ of eye.

Scales 47 or 48 in lateral line with 3 to 5 more on latter; 6 scales above lateral line, 10 to 12 below, 15 to 20 predorsal forward midway in interorbital, 6 or 7 rows on cheek to preopercle ridge. Suprascapula not serrate. Scales with 9 basal radiating striae; 47 to 106 apical denticles, with 12 to 14 transverse series of basal elements; circuli fine.

D. X, 11, I, third spine 2¼ to 3 in total head length, second ray 2¾ to 3¼; A. III, 8, I, third spine 3¾ to 4¼, first ray 2⅞ to 3; caudal 1⅘ to 1, forked; least depth of caudal peduncle 3⅛ to 3½; pectoral 1⅕ to 1¼; ventral 1⅗ to 1⅞.

Brown, with dull yellowish shades above, sides lighter and whitish below. Fins all pale.

Hawaii. The species is rose red in life, though less brilliant than *Etelis carbunculus*, and it also has a golden lateral streak. Though Jordan and Evermann give the maximum as 647 mm. the largest I examined was 585 mm.

50714 U.S.N.M. Honolulu, Hawaiian Islands. Dr. J. C. Wood, 1889. Length 373? mm. Type of *Eteliscus marshi.*

52673 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 288 mm.

ETELIS CARBUNCULUS Cuvier

Etelis carbunculus Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 127, pl. 18. Mahé, Seychelles.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 79 (Mauritius).—Gill, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 448 (copied).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.—Playfair, Proc. Zool. Soc. London, 1867, p. 846 (Seychelles).—Jordan and Snyder, Annot. Zool. Japon., vol. 3, 1901, p. 77 (Nagasaki).—Jordan and W. F. Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 465 (paratypes of *Etelis evurus;* Havana).—Fowler, Bull. Bishop Mus., No. 22, 1925, p. 26 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 193, pl. 17a (Honolulu, Hilo, type of *Etelis evurus*); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 634 (Honolulu).

Serranus oculatus Cuvier, Hist. Nat. Poiss., vol. 2, 1828, p. 266, pl. 32. Martinique.—Schlegel, Fauna Japon., Poiss., pt. 1, 1842, p. 5 (Nagasaki Bay).

Anthias oculatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 92 (South America, Jamaica, West Indies, Madeira).

Etelis oculatus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 449 (compiled).—Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math. nat. Klasse, vol. 47, pt. 1, 1883, p. 223 (Nagasaki, Tokyo).

? *Labrum anthiam* Lichtenstein, Descript. Animal., Forster, 1844, p. 155. Tropical Pacific.

Etelis coruscans Valenciennes, Comptes Rendu Acad. Sci. Paris, vol. 54, June 9, 1862, p. 1166. Bourbon.—Gill, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 449 (note).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 23.

Etelis evurus Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 184. Hilo, Hawaiian Islands.—Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 527 (Honolulu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 242, fig. 100, pl. 38 (Hilo, Honolulu).—Jordan and Snyder, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 213 (Honolulu).

Depth 3 to 3⅗; head 3 to 3⅛, width 2 to 2¼. Snout 3½ to 3⅔ in head from snout tip; eye 2⅞ to 3⅛, greater than snout or interorbital; maxillary reaches eye center, expansion 3 to 3⅕ in eye, length 2 to 2⅕ in head from upper jaw tip; each jaw with band of fine teeth and outer row of larger ones, above pair of wide-spaced slightly larger as canines; band of small teeth across vomer and on each palatine; interorbital 3⅛ to 3⅕ in head, scarcely elevated, level; preopercle edge minutely denticulated. Gill rakers 10+14, lanceolate, 2 or 3 above as rudiments, much greater than gill filaments or 2⅓ in eye.

Scales 46 to 48 in lateral line to caudal base and 4 to 8 more on latter; 6 or 7 scales above lateral line, 12 or 13 below, 17 to 20 predorsal, 6 rows on cheek. Suprascapula denticulate. Scales with 6 or 7 basal radiating striae; apical denticles 53 to 88 short points, with 0 to 9 transverse series of basal elements; circuli fine.

D. X, 11, I, third spine 1¾ to 2 in total head length, first ray 3 to 3¼; A. III, 8, I, third spine 3¼ to 3⅘, first ray 2⅘ to 3; least depth of caudal peduncle 3⅖ to 3⅗; pectoral 1⅒ to 1¼; ventral 1⅖ to 1⅗; caudal 2¼ to 2¾ in rest of body, deeply forked, lobes ending in long slender points.

Brown, little paler below, with silvery reflections. Iris pale yellowish brown. Fins all pale or very light in color.

Mauritius, Bourbon, Réunion, Seychelles, Japan, Hawaii. Also in the Atlantic (West Indies). A large and valued food fish, brilliant red in life, reaching a length of 1018 mm. Witih age the caudal lobes prolonged slender points.

50662 U.S.N.M. Honolulu. Bureau of Fisheries. Type of *Etelis evurus.*

50663. U.S.N.M. Hilo, Hawaii. Bureau of Fisheries. Length 340 mm. As *Etelis evurus.*

52812 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 280(?) mm. As *Etelis evurus.*

Three examples, A.N.S.P. Honolulu. 1922. Henry W. Fowler. Length 250 to 400 mm.

Genus APHAREUS Cuvier

Aphareus Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 485. Type *Aphareus caerulescens* Cuvier, designated by Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, 1913, p. 165.

Sacrestinus Jordan, Evermann, Tanaka, Proc. California Acad. Sci., ser. 4, vol. 16, No. 20, Nov. 14, 1927, p. 670. Type *Aphareus flavivultus* Jenkins, monotypic.

Fares Jordan, Evermann, Tanaka, Proc. California Acad. Sci., ser. 4, vol. 16, No. 20, Nov. 14, 1927, p. 673. Type *Aphareus rutilans* Cuvier, orthotypic.

Body elongate, compressed. Head pointed, compressed. Eye moderate. Mouth large, lower jaw strong and with prominent chin. Maxillary rather narrow. Teeth in jaws in several rows, minute or deciduous, without canines; palate and tongue toothless. Preopercle entire, with broad naked flange. Vertebrae 24, of which 13 caudal. About 70 scales in a lateral series. Snout and jaws scaleless, also dorsal and anal; head with temporal region, jaws and opercles scaly; caudal minutely scaled. Dorsal low, continuous, with 10 spines and 10 or 11 rays, last soft ray well extended. Anal with 3 spines and 8 rays, last ray well extended. Caudal deeply forked, lobes long, slender, pointed. Pectoral long, falcate, lower rays extended with age. Ventral inserted below pectoral.

ANALYSIS OF SPECIES

a^1. Aphareus. Gill rakers 5+16 to 18; scales 68 to 70 in lateral line to caudal base -- furcatus.

a^2. Fares. Gill rakers 16 to 19+32 to 34; scales 70 to 73 in lateral line to caudal base -- rutilans.

APHAREUS FURCATUS (Lacépède)

Labrus furcatus Lacépède, Hist. Nat. Poiss., vol. 3, 1802, pp. 429, 447, pl. 21, fig. 1. The Great Ocean [Mauritius].

Aphareus furcatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 386 (compiled); Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873, p. 17 (Society Islands).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 80 (not pl. [21] 299, fig. 2) (Amboina).—Streets, Bull. U. S. Nat. Mus., No. 7, 1877, p. 90 (Fanning Islands).—Jordan and Starks, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 719, pls. 28–29 (Odawara; skeleton).—Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 451 (Honolulu).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, 1911, p. 467, fig. 7 (Odawara).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 450 (Ceylon; Japan).—Fowler, Bull. Bishop Mus. No. 22, 1925, p. 26 (Honolulu).—Jordan, Evermann, Tanaka, Proc. California Acad. Sci., ser. 4, vol. 16, No. 20, Nov. 14, 1927, p. 672 (Honolulu).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 194 (Honolulu, Fanning Islands, type of *Aphareus flavivultus*, Society Islands); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 635 (Honolulu).

Caranxomorus sacrestinus Lacépède, Hist. Nat. Poiss., vol. 5, 1803, pp. 681, 682. No locality (on Commerson).

Aphareus caerulescens Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 487, pl. 167*b*. Port Louis, Mauritius.—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 25.

Aphareus flavivultus Jenkins, Bull. U. S. Fish Comm., vol. 19, 1899 (1901), p. 390, fig. 1. Honolulu; vol. 22, 1902 (1903), p. 451 (Kona, Hawaii).—Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 522 (Honolulu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 235 (Honolulu, Kailua, Hilo).—Jordan and Dickerson, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 611 (Honolulu).

Aphareus (*Sacrestinus*) *flavivultus* Jordan, Evermann, Tanaka, Proc. California Acad. Sci., ser. 4, vol. 16, No. 20, Nov. 14, 1927, p. 671 (Honolulu).

Depth 3 to 3⅕; head 3 to 3⅕, width 2⅛ to 2⅕. Snout 3 to 3⅛ in head from snout tip; eye 4 to 4⅗, 1⅓ to 1⅖ in snout, 1⅓ to 1½ in interorbital; maxillary reaches ⅔ to ¾ in eye, expansion 1⅕ to 2 in eye, length 1⅕ to 2 in head from snout tip; teeth in villiform bands in jaws of about 4 or 5 irregular rows and an outer slightly enlarged row; no teeth on palate or tongue; interorbital 2⅞ to 3, broadly convex; preopercle entire, flange with horizontal venules. Gill rakers 10+16, lanceolate, 1¼ in eye; gill rakers ⅔ of gill filaments.

Scales 68 to 70 in lateral line to caudal base and 5 or 6 more on latter; 10 scales above lateral line, 18 below, 23 to 26 predorsal, 8 rows on cheek. Suprascapula entire, venulose. Preorbital with oblique parallel striae. Scales with 12 or 13 basal radiating striae; circuli minute.

D. X, 10, I, third spine 2⅕ to 2½ in total head length, last ray 2 to 2⅛; A. III, 8 I, third spine 3⅓ to 3⅗, last ray 2 to 2⅕; least depth of caudal peduncle 3⅕ to 3¼; pectoral 1⅛ to 1⅓; ventral 1⅔ to 1¾; caudal 2⅘ to 3 in combined head and body.

Olive green on back, little paler on lower surface. Iris brownish. Fins brown like body.

Mauritius, Réunion, Ceylon, East Indies, Japan, Polynesia, Hawaii. Among Indo-Pacific snappers the uniform dark coloration of this species is exceptional. I have no examples, except Hawaiian, with the variable white frontal area for which the nominal *Aphareus flavivultus* was proposed by Jenkins and more recently as the genotype of *Sacrestinus*. The species attains over 700 mm. though the average is usually much less. Alcoholic examples often show brilliant blue, violet, or green reflections on the back.

A1438. Kait Point, Libani Bay, Celebes. December 29, 1909. Length 348 mm.

A1146. Kayoa Island. November 29, 1909. Length 334 mm.

A824, A825. Talisse Island, north of Celebes. November 9, 1909. Length 325 to 328 mm.

A1334. Tomahu Island, Bouro. December 12, 1909. Length 330 mm.

A1291, A1292. Uki, Bouro. December 9, 1909. Length 305 to 330 mm.

19241 U.S.N.M. Fanning Islands. Dr. T. H. Streets. Length 322 mm.

49691 U.S.N.M. Honolulu. Dr. O. P. Jenkins. Type of *Aphareus flavivultus.*

52701 U.S.N.M. Hawaiian Islands. Bureau of Fisheries. Length 300 ? mm. As *Aphareus flavivultus.*

55020 U.S.N.M. Honolulu. *Albatross* Collection.

55090 U.S.N.M. Honolulu. *Albatross* Collection. Length 225 to 270 mm. 2 examples. As *Aphareus flavivultus.*

62357 U.S.N.M. Honolulu. D. S. Jordan. Length 272 mm. As *Aphareus flavivultus.*

APHAREUS RUTILANS Cuvier

Aphareus rutilans Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 490. Red Sea.—Rüppell, Neue Wirbelth., Fische, 1835, p. 121 (Djedda).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 386 (compiled).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 25.—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 768 (Red Sea).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–76, pl. (21)299, fig. 2.—Klunzinger, Fische Roth. Meer., 1884, p. 45.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 19 (Rubi, New Guinea).—Boulenger, Proc. Zool. Soc. London, 1887, p. 657 (Muscat).—Day, Fishes of India, Suppl., 1888, p. 782 (Ceylon).—Boulenger, Proc. Zool. Soc. London, 1889, p. 245 (Muscat).—Zugmayer, Abhandl. K. Bayer, Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Oman).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 195, fig. 45 (type of *Aphareus thompsoni.*)

Aphareus (*Fares*) *rutilans* Jordan, Evermann, Tanaka, Proc. California Acad. Sci., ser. 4, vol. 16, No. 20, Nov. 14, 1927, p. 673, pl. 24, fig. 1 (Honolulu).

Aphareus furcatus (not Lacépède) Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 80 (part).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 39, Jan. 30, 1911, p. 467 (part).

Aphareus thompsoni Fowler, Occas. Pap. Bishop Mus., vol. 8, No. 7, 1923, p. 382. Honolulu.

Depth 3⅗ to 3⅔; head 3⅛ to 3⅕, width 2¼ to 2⅖. Snout 2⅞ to 3 in head from snout tip; eye 4½ to 5⅖, 1⅖ to 1¾ in snout, 1⅔ in interorbital; maxillary reaches ⅗ to ⅔ in eye, expansion 1¾ to 2 in eye, length 1⅞ to 2 in head from snout tip; teeth minute, sharp pointed, form narrow uniform band in each jaw, though obsolete or absent in mandible posteriorly; interorbital 3⅛ to 3⅖, broadly convex; preopercle edge entire, flange with fine parallel venules. Gill rakers 19+32, lanceolate, inner edges finely spinescent, length 1⅛ in eye; gill filaments ⅗ of gill rakers.

Scales 70 to 73 in lateral line to caudal base and 3 to 5 more on latter; 8 to 10 scales above lateral line, 17 to 18 below, 22 or 23 predorsal, 8 or 9 rows on cheek. Suprascapula entire, striate. Scales with 10 or 11 basal radiating striae; about 108 weak apical denticles, very small, with 14 or 15 transverse series of basal elements; circuli very fine.

D. X, 11, I, spines flexible, fourth 2⅗ in total head length, first ray 4, last ray 2; A. III, 8, I, spines flexible, third spine 3⅔ to 4½, first first ray 3⅞ to 4⅘, last ray 2; caudal 1, deeply forked, with long slender, pointed lobes; least depth of caudal peduncle 4⅛ to 4⅕; pectoral 1⅒ to 1⅕; ventral 1½ to 1⅔.

Back light brown, becomes pale to whitish below. Body with silvery and lilac reflections. Iris light yellowish white. Fins all uniform pale brown.

Red Sea, Arabia, Réunion, Ceylon, New Guinea, Hawaii. Known chiefly by its increased gill rakers. In my figure of the type of *Aphareus thompsoni* the infraorbital is shown as much too broad. Likewise the figure does not show the lower lobe of the pectoral or the last dorsal and anal rays prolonged. The figure in question also has the first dorsal spine too long. In material before me the penultimate dorsal ray is only ⅓ length of last ray.

5189. Jolo market. March 7, 1908. Length 310 mm.

Family POMADASYIDAE

Body oblong, somewhat elevated. Head large. Mouth variably large or small, low, terminal, horizontal. Premaxillaries protractile. Maxillary without supplemental bone, slips below preorbital most its length. Teeth pointed, none as distinct canines, palate and tongue edentulous. Preorbital usually deep. Preopercle serrate. Opercle spineless. Gill rakers moderate. Gills 4, large slit behind fourth. Pseudobranchiae large. Gill membranes separate, free from isthmus. Branchiostegals 6 or 7. Vertebrae 24, of which 14 caudal. Intestinal canal short. Stomach coecal. Pyloric coeca few. Air bladder present. Scales moderate, adherent, usually ctenoid, sometimes nearly cycloid. Sides of head usually scaly. Lateral line well developed, concurrent with back, often not extending on caudal. Dorsal single, continuous, or deeply notched, sometimes divided as two fins; spines 9 to 14, usually strong and depressible in a groove, heteracanthous. Anal like dorsal, with 3 spines. Caudal usually more ore less concave behind. Ventral thoracic, with spine and 5 rays and basal scale like appendage.

A large group of carnivorous shore fishes, found in most warm seas and many valued as food. They are intermediate between the Lutjanidae and the Sparidae, some also approach the Serranidae while others suggest the Sciaenidae.

ANALYSIS OF GENERA

a^1. CAESIONINAE. Body oblong, oval or partly elongate; palate without or with only rudimentary teeth, maxillary moderately or slightly protractile, scaleless; preopercle not serrated; dorsal not divided, spines slender.
b.^{1} Snout not ending in conic fleshy papilla or point.
c.^{1} Scales in horizontal rows below lateral line, in parallel or oblique rows above lateral line.
d.^{1} Soft dorsal twice length of spinous fin.
e^1. Dorsal rays 15 or 16, fins scaleless ---------- **Gymnocaesio.**
e^2. Dorsal rays 21, fin scaled ---------- **Pterocaesio.**
d.^{2} Soft dorsal and anal subequal, fins scaly ---------- **Caesio.**
c^2. Scales in oblique rows crossing lateral line; no scales on front of head; maxillary little protractile ---------- **Pinjalo.**
b^2. Snout ends in conic fleshy tip ---------- **Mirolabrichthys.**
a^2. Body usually oblong; palate toothless; preopercle serrated; dorsal spines usually robust.
f^1. Chin without central groove.
g^1. PLECTORHINCHINAE. Infraorbital without spine; obtuse head well scaled, also soft vertical fins, at least basally; scales small, 50 to 125 in lateral line; dorsal rays 15 to 23.
h^1. Chin without barbels; dorsal without antrorse spine in front; caudal emarginate or forked.
i^1. Gill rakers 16 or 17+24 or 25, lanceolate ---- **Parapristipoma.**
i^2. Gill rakers 7 or 8+11 to 15 ---------- **Plectorhinchus.**
h^2. Chin with tuft of small barbels; dorsal preceded by antrorse spine; snout end with papillae; caudal rounded. **Hapalogenys.**
g^2. SCOLOPSINAE. Infraorbital usually with large spine directed back; dorsal and anal scaleless; scales large, 35 to 50; dorsal rays 9 to 11 ---------- **Scolopsis.**
f^2. POMADASYINAE. Chin with central groove behind symphysis of lower jaw; soft dorsal and anal with low basal scaly sheath, otherwise scaleless; anal spines strong, especially second; dorsal rays 12 to 18 ---------- **Pomadasys.**

Genus GYMNOCAESIO Bleeker

Gymnocaesio BLEEKER, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 9, 1876, p. 152. Type *Caesio gymnopterus* BLEEKER, orthotypic.

Body elongate, slender. Head pointed. Eye advanced, moderate. Jaws small, horizontal, protractile. Teeth in jaws minute, none on palate. Branchiostegals 6. Scales small, 80 in lateral series, in horizontal rows along body. Head, except muzzle, scaly. Fins scaleless. Dorsal spines 9, rays 15 or 16. Anal spines 3, rays 12 or 13. Caudal forked. Pectoral pointed. Ventral small.

GYMNOCAESIO ARGENTEUS (Bloch)

Bodianus argenteus Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, p. 57, pl. 231, fig. 2. "Mitellandische Meer" [doubtless erroneous, evidently Indo-Pacific].—Walbaum, Artedi Pisc., vol. 3, 1792, p. 673 (on Bloch).—Schneider, Syst. Ichth. Bloch, 1801, p. 332 (on Bloch).—Lacépéde, Hist. Nat. Poiss., vol. 4, 1802, pp. 279, 286 (on Bloch).

Caesio argenteus Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 437 (East Indies).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 393 (compiled); Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 33, pl. 24, fig. B (Kingsmills).—Bleeker, Nederland. Tijds. Dierk., vol. 4, 1874, p. (117) 150 (China).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 204 (compiled).

Caesio gymnopterus Bleeker, Nat. Tijds. Nederland. Indië, vol. 10, 1856, p. 372. Ternate.—Günther, Cat. Fish. Brit. Mus., vol. 1859, p. 394 (copied).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (32) 310, fig. 5.

Smaris gymnopterus Bleeker, Arch. Néerland. Sci. Nat., vol. 8, 1873, p. 181.

Gymnocaesio gymnopterus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 34 (Flores, Ternate, Amboina).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 123 (Ambon).

Depth 4½ to 5; head 3¼ to 4, width 2¼ to 2½. Snout 4⅕ to 4½ in head; eye 3⅘ to 4, greater than snout or interorbital; maxillary reaches eye, expansion 2 to 2⅕ in eye, length 3 to 3⅕ in head; teeth very small; interorbital 4½ to 4⅗, slightly convex. Gill rakers 10+21, lanceolate, longer than gill filaments or 1⅓ in eye.

Scales 68 to 70 in lateral line to caudal base and 2 or 3 more on latter; 6 scales above lateral line, 11 or 12 below, 34 to 36 predorsal forward opposite hind nostril, 9 rows on cheek, of which 4 on preopercle flange. Scales with 5 or 6 basal radiating striae; apical denticles 18 to 23, strong points with 1 or 2 series of basal elements; circuli fine.

D. X, 14 or 15, second dorsal spine 1⅘ to 2 in total head length, third ray 3⅛ to 3½; A. III, 12, third spine 2½ to 3⅕, first ray 2⅖ to 3; caudal 1⅕ to 1¼, deeply forked; least depth of caudal peduncle 3⅞ to 4; pectoral 1¼ to 1⅖; ventral 1⅞ to 2.

Back light brown, below silvery white. White line from above eye to upper edge of caudal peduncle, also 2 more parallel broken lines above, these mostly as spots or bars and very variable. Iris silvery white. Dorsals pale brownish, other fins whitish.

East Indies, China, Melanesia. The differences as shown in Garrett's figure as published by Günther, and Bleeker's figure, are evidently due to inaccuracies in the former. Garrett shows the scales about 60 in a lateral series and Bleeker about 75. A very elegant, trim little fish, the most slender of its family.

Fifty examples. Batangas market. June 7, 1908. Length 45 to 98 mm.

Thirty-three examples. Cebu market. March 20, 1909. Length 38 to 92 mm. [1417.] Greenish above, white below, with red wash showing after death; pale stripe from upper angle of gill opening backward to caudal; fins pale, more or less pink above, lower fins white or colorless; caudal distinctly reddish, without dark tips.

Fifty-three examples. [D. 5562.] Tanum Point, Jolo, N. 87° E. 17.2 miles (5° 54′ 20″ N., 121° 13′ 12″ E.). September 19, 1909. Length 26 to 52 mm.

One hundred and thirteen examples. Varadero Harbor. July 22, 1908. Length 29 to 40 mm.

32730 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 85 mm.

Genus PTEROCAESIO Bleeker

Pterocaesio Bleeker, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 9, 1876, p. 153. Type *Caesio multiradiatus* Steindachner, orthotypic.

Liocaesio Bleeker, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 9, 1876, p. 153. Type *Caesio cylindricus* Günther, orthotypic.

Clupeolabrus Nichols, Amer. Mus. Novit., No. 94, Oct. 19, 1923, p. 2. Type *Clupeolabrus dubius* Nichols, monotypic.

Body elongate, slender. Upper jaw protractile. Teeth minute and uniserial in jaws. Scales 70 in lateral series, in horizontal rows on body. Head above, preopercle and opercle scaled. Dorsals scaly. Dorsal spines 11, slender, rays 21. Anal rays 13.

PTEROCAESIO TILE (Cuvier)

Caesio tile Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 428. Caroline Archipelago.—Valenciennes, Règne Animal, Cuvier, Ill., 1839, pl. 36, fig. 2 (Mauritius).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 393 (compiled); Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 34 (Kingsmills; Society Islands); Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 58 (Tongatabu).—Schmeltz, Cat. Mus. Godeffroy, No. 9, 1884, p. 29 (Mortlock).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1885, p. 29 (Mortlock).—Kendall and Radcliffe, Mem. Mus. Comp. Zool., vol. 35, 1912, p. 114 (Mangareva, Gambier Islands).—Fowler, Bull. Bishop Mus., No. 22, 1925, p. 9 (Guam); Mem. Bishop Mus., vol. 10, 1928, p. 204 (Kingsmills, Society Islands, Mangareva, Nukuhiva, Guam).

Coesio tile Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, 1830, p. 181 (Caroline Islands).

Caesio cylindricus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 393. Madagascar.—Bleeker, Nederland. Tijdschr. Dierk., vol. 1, 1863, p. 344 (Madagascar).—Schmeltz, Cat. Mus. Godeffroy, No. 1, 1864, p. 8 (East Indies); No. 7, 1879, p. 40 (Tahiti); No. 9, 1884, p. 29 (Tahiti).

Caesio (*Caesio*) *cylindricus* Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 171, pl. 6, fig. 1 (type).

Caesio multiradiatus Steindachner, Verh. zool. bot. Ges. Wien, vol. 8, 1861, p. 175, pl. 5, fig. 1. Amboina.

Pterocaesio multiradiatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 41 (compiled).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 38 (Zamboanga).

Clupeolabrus dubius Nichols, Amer. Mus. Novit., No. 94, Oct. 19, 1923, p. 2, fig. 2. Kamako, Mangareva Island.

Depth 3⅞ to 4½; head 3½ to 3¾, width 1⅘ to 1⅞. Snout 3⅔ to 4 in head from upper jaw tip; eye 3⅖ to 4, 1 to 1⅛ in snout, 1⅛ to 1¼ in interorbital; maxillary reaches to or ⅛ in eye, expansion 1⅞ to 2 in eye, length 2½ to 2⅞ in head from upper jaw tip; teeth feeble, very minute; interorbital 3⅖ to 4, but little convex. Gill rakers 8 to 10+21 to 23, lanceolate, little less to equal gill filaments or 1¾ in eye.

Scales 70 to 72 in lateral line to caudal base and 5 or 6 more on latter; 7 scales above lateral line, 14 or 15 below, 26 to 28 predorsal forward opposite front pupil edge. Scales with 10 to 14 basal radiating striae; apical denticles 30 to 65, with 1 to 7 transverse series of basal elements; circuli fine.

D. X or XI, 21, i or 22, i, third spine 2 to 2⅞ in total head length, first ray 2⅗ to 2⅞; A. III, 12, i or 13, i, second spine 2⅗ to 3, first ray 3⅛ to 3⅖; caudal 1⅛ to 1¼, well forked; least depth of caudal peduncle 2⅞ to 3½; pectoral 1⅛ to 1½; ventral 1½ to 2.

Olive brown above with bluish tint and obsolete gray band from hind eye to caudal base. Above 3 or 4 dark longitudinal lines follow scale courses, not sharply defined. Under surface of body white. Iris whitish. Fins pale, dark longitudinal band on each caudal lobe and dark spot at pectoral origin and axil.

Mauritius, Madagascar, East Indies, Philippines, Melanesia, Micronesia, Polynesia. Besides the materials below I have also examined 18 examples from Oceania. There is little doubt but that *Caesio cylindricus* is a synonym. Sauvage gives D. XIII, 17 in his description though his plate shows XVII, 18?

65438 U.S.N.M. Mangareva. *Albatross* Collection. Length 135 to 148 mm. 3 examples.

Genus CAESIO Lacépède

Caesio Lacépède, Hist. Nat. Poiss., vol. 3, 1802, p. 85. Type *Caesio caerulaureus* Lacépède, designated by Bleeker, Arch. Néerland. Sci. Nat. Harlem, vol. 11, 1876, p. 274.

Odontonectes Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 265. Type *Caesio erythrogaster* (Kuhl and Van Hasselt) Cuvier, monotypic.

Paracaesio Bleeker, Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1875, pp. 38, 92. Type *Caesio xanthurus* Bleeker, monotypic.

Body oblong, back sometimes little high. Head pointed, compressed. Eye moderate. Upper jaw moderate or well protractile. Mouth cleft more or less oblique, jaws equal or lower slightly longer. Teeth fine, in bands in jaws, rudimentary or absent from vomer, none on palatines. Preopercle entire or minutely denticulated. Pseudobranchiae present. Air bladder simple. Pyloric appendages 5. Branchiostegals 6 or 7. Scales 55 to 80 in a lateral series, finely ctenoid. Dorsals usually more or less scaly. Dorsal spines 9 to 11, slender, rays 13 to 17, fins continuous or anterior part highest. Anal spines 3, rays 11 to 14. All spines feeble. Caudal deeply forked.

ANALYSIS OF SPECIES

a^1. PARACAESIO. Dorsal rays 10, anal rays 8; coloration largely uniform. **xanthurus.**

a^2. Dorsal rays 12 to 15, anal rays 11 or 12.
  b^1. CAESIO. Jaws without an external row of denticles.
    c^1. Scales large, 53 to 57 in lateral line---------------------------**lunaris.**
    c^2. Scales smaller, 60 to 65 in lateral line; body usually without bands or spots.
      d^1. Caudal uniformly pale; black spot at pectoral origin.
        e^1. Preorbital width more than half of eye; spinous dorsal naked. **axillaris.**
        e^2. Preorbital width $\frac{1}{4}$ or less of eye; spinous dorsal finely scaled basally--**xanthonotus.**
      d^2. Caudal with black tips to each lobe.
        f^1. No median lateral golden band---------------------------**pisang.**
        f^2. Median lateral golden band, also another narrower along back above --**chrysozonus.**
      d^3. Caudal with black longitudinal band in each lobe--------**caerulaureus.**
    c^3. Scales very small, 70 to 80 in lateral line; dark lateral band from eye to upper median caudal rays and another along back and parallel; ends of caudal lobes dusky----------------------------**digramma.**
  b^2. ODONTONECTES. Jaws with external row of denticles; body without spots or bands ---**cuning.**

Subgenus PARACAESIO Bleeker

Dorsal rays 10, anal rays 8. Coloration largely uniform.

CAESIO XANTHURUS Bleeker

Caesio xanthurus BLEEKER, Versl. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 3, 1869, p. 78. Nossibe, Madagascar; Rech. Faune Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 37, pl. 11 (Nossibe).

Paracaesio xanthurus KLUNZINGER, Fische Roth. Meer., 1884, p. 17.

Paracaesio hedleyi McCULLOCH and WAITE, Trans. Proc. Roy. Soc. South Australia, vol. 40, 1916, p. 440, pl. 42. Lord Howe Island.

Depth $2\frac{9}{10}$; head $3\frac{1}{2}$. Snout $4\frac{1}{8}$ in head from snout tip; eye $3\frac{7}{8}$, greater than snout; maxillary reaches $\frac{1}{3}$ in eye, expansion $1\frac{2}{3}$ in eye, length $2\frac{3}{4}$ in head from snout tip; teeth fine, in bands in jaws; also small patch on vomer and each palatine; interorbital little less to subequal with eye, convex; preopercle edge finely denticulate.

Scales 70 to 72 in lateral line; 8 above, 16 below, predorsal extend forward opposite front of eye, 8 rows on cheek to preopercle ridge.

D. X, 10 or 11, third spine $1\frac{9}{10}$ in total head length, first ray $2\frac{1}{8}$; A. III, 8 or 9, third spine $2\frac{7}{8}$, first ray $2\frac{3}{5}$; caudal 3 in combined head and body to caudal base, deeply forked; least depth of caudal peduncle $2\frac{2}{3}$ in total head length; pectoral 1; ventral $1\frac{2}{5}$.

Head and front of trunk blackish violaceous, rest of body yellowish. Dorsals and anals dusky, other fins yellowish. Length 280 mm. (Bleeker.)

Madagascar, Lord Howe Island. *Paracaesio hedleyi* is described from an example 336 mm. long. It was supposed to differ in having the front dorsal spines showing a slight lobe and the coloration a little more variegated.

Subgenus CAESIO Lacépède

Dorsal rays 12 to 15, anal rays 11 or 12. Jaws without an external row of denticles.

CAESIO LUNARIS Cuvier

Caesio lunaris (EHRENBERG) CUVIER, Hist. Nat. Poiss., vol. 6, 1830, p. 441. East Indies, Red Sea, New Ireland.—RÜPPELL, Neue Wirbelth., Fische, 1835, p. 120 (Massaua).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 390 (copied).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 31 (Zanzibar; Aden).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 769 (Koseir, Red Sea).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 37, pl. (56) 334, fig. 4 (Java).—KLUNZINGER, Fische Roth. Meer., 1884, p. 46.—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 20 (North Celebes).—STEINDACHNER, Abh. Senckenberg. Naturf. Ges., vol 25, 1900, p. 418 (Ternate).—PELLEGRIN, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).—SEALE and BEAN, Proc. U. S. Nat. Mus., vol 33, 1907, p. 243 (Zamboanga).—STEINDACHNER, Denkschr. Akad. Wiss. Wien. Math.-nat. Klasse, vol. 71, pt. 1907, p. 136 (Bal Haf, Makalla, Tamarida, Sokotra).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 286 (Kangeang Island; Macassar).—BAMBER, Journ. Linn. Soc. London, vol. 31, Zool., 1915, p. 481 (Sudanese Red Sea).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 37 (Zanzibar).—VINCIGUERRA, Ann. Mus. Civico Stor. Nat. Genova, series 3, vol. 10, 1926, p. 572 (Sarawak).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 203 (Shortland Island); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 638 (Shortland Island).

Coesio lunaris LESSON, Voy. Coquille, Zool., vol. 2, pt. 1, 1830, p. 186 (Port Praslin, New Ireland).

Depth 2¾ to 2⅘; head 3¼ to 3⅓, width 1⅘ to 1⅞. Snout 3⅞ to 4 in head from snout tip; eye 4 to 4¼, 1 to 1⅛ in snout, 1⅓ to 1⅔ in interorbital; maxillary reaches nearly or quite to front eye edge, expansion 2 in eye, length 3 in head from snout tip; lips narrow; teeth in narrow villiform bands in jaws, none on palate or tongue; interorbital 2⅞ to 3, convexly elevated; preopercle edge entire. Gill rakers 9+19, lanceolate, equal gill filaments or 1⅔ in eye.

Scales 48 to 51 in lateral line to caudal base and 5 or 6 more on latter; 7 or 8 scales above lateral line, 14 to 16 below, 24 to 26 predorsal scales forward opposite front eye edge of which 16 or 19 to occiput, 4 rows on cheek to angle of preopercle ridge. Suprascapula entire. Vertical fins densely covered with fine scales. Scales with 15 to 17 basal radiating striae; apical denticles 72 to 76, with 15 to 17 transverse series of basal elements; circuli very fine.

D. X, 13, I, third spine $1\frac{4}{5}$ to $2\frac{2}{5}$ in total head length, first ray $3\frac{1}{5}$ to $3\frac{2}{5}$; A. III, 11, I, second spine 3 to $3\frac{1}{5}$, first ray $3\frac{1}{5}$ to $3\frac{1}{2}$; least depth of caudal peduncle $3\frac{1}{4}$ to $3\frac{1}{3}$; ventral $1\frac{1}{3}$ to $1\frac{1}{2}$; caudal $2\frac{7}{8}$ to $3\frac{1}{3}$ in combined head and body, deeply forked, slender lobes falcate; pectoral $2\frac{7}{8}$ to 3.

Back gray brown, lower sides and under surface whitish. Back with blue tinge, also azure green tinge on some scales. Iris yellowish brown. Dorsals grayish dusky, also caudal with tips broadly blackish. Anal grayish. Paired fins pale, inside pectoral base small dusky gray blotch, slightly reflected as small spot at pectoral origin.

Red Sea, Arabia, Zanzibar, East Indies, Philippines, Tonkin, Melanesia. A handsome species, largely bluish in color and with broad blackish tip to each caudal lobe. The vertical fins are also more closely covered with small scales than in most species.

11290, 22109. Alimango Bay, Burias Island. March 5, 1909. Length 160 mm.

17771. Alimango Bay. June 4, 1909. Length 170 mm.

15711 [286], 15712 [285]. Busin Harbor, Burias Island. March 8, 1909. Length 109 to 125 mm.

15018. Makesi Island, Palawan. April 5, 1909. Length 140 mm.

5571. Masbate Reef, Masbate. April 20, 1908. Length 275 mm.

22457. Nasugbu, Luzon. January 16, 1908. Length 92 mm.

12582, 12583, 13443. Opol, Mindanao. August 4, 1909. Length 179 to 208 mm.

16993, 16994, 16997. Parang, Mindanao. May 23, 1908. Length 150 to 173 mm.

8007, 8009, 8011, 8012, 11744, 11745, 13854. Port Banalacan, Marinduque. February 23, 1909. Length 192 to 305 mm. Top of head and back indigo to Prussian blue; lower parts whitish, washed with red; scaly dorsal similar to back in color, margin blackish, with red shades posteriorly; caudal body color, tipped with black; anal bright red; black blotch at upper base of pectoral, including all external side of axil; paired fins dusky.

9023, 9024, 10355. Port Jamelo, Luzon. July 13, 1908. Length 158 to 192 mm.

5291, 5292, 6298, 6299. Romblon. March 25, 1908. Length 173 to 178 mm. Back greenish; lower portions washed with rosy; lacking purple stripes on head and having tips of caudal black; the margin within the fork same color as anal; terminal portion of dorsal sooty with brownish shades on membranes; paired fins reddish or rosy, axil with black; scaled portion of dorsal with irregular dashes of light on scales.

A656, A657. Simaluc Sibi Sibi Island. September 23, 1909. Length 276 to 285 mm.

19223. Tapiantana Island, south of Zamboanga. September 13, 1909. Length 117 mm.

4968. Tataan, Tawi Tawi Group. February 21, 1908. Length 287 mm. Back and top of head indigo and green, lower parts lighter, flushed with bright salmon-red on median region throughout. Scaled dorsal pale with shades of blue and green; naked membranes dusky pink, spines and rays darker. Caudal purplish. Anal membrane pink, becoming scarlet posteriorly; posterior rays bluish. Ventral hyaline, flushed with salmon. Pectoral with hyaline membrane and pink rays; purplish bar at base; axil black, including blotch just above. Iris red with silvery.

10458. Tilig, Lubang Island. July 14, 1908. Length 102 mm.

A961, A962. Binang Buang, Gulf of Tomini, Celebes. November 16, 1909. Length 225 to 236 mm.

A868. Cape Kait, Libani Bay, Celebes. December 29, 1909. Length 257 mm.

A868. Limbe Strait, Celebes. November 10, 1909. Length 278 mm.

21381. Labuan Blanda Island, Buton Strait. December 14, 1909. Length 58 mm. Caudal tips uniformly pale.

18492 [2175]. Tanakeke Island, Flores Sea. December 21, 1909. Length 128 mm. Black caudal tips; yellow of posterior body and tail distinct. Rosy wash on lower surfaces and red on anal. Other examples of same size taken with this show almost exactly same coloration with exceptions noted and yellows slightly more distinct on dorsal fin.

One example. Gomomo Island, Pitt Passage. December 3, 1909. Length 123 mm.

58038 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 315 mm.

72681 U.S.N.M. Java. Bryant and Palmer. Length 141 mm.

72682 U.S.N.M. Java. Bryant and Palmer. Length 225 to 228 mm. 2 examples.

84215 U.S.N.M.. Philippines. Dr. F. Baker. Length 140 mm. As *Caesio coerulaureus.*

84234 U.S.N.M. Zamboanga. Dr. F. Baker. Length 145 to 151 mm. 6 examples.

CAESIO AXILLARIS Boulenger

Caesio axillaris Boulenger, Marine Invest. South Africa, vol. 1, 1902, p. 10, pl. 1. Buffalo Bay in False Bay, in 20 fathoms.—Gilchrist, Marine Invest. South Africa, vol. 1, 1902, p. 110 (copied).—Von Bonde, South Afric. Fisher. Marine Biol. Survey, Rep. No. 3, 1922 (1924), p. 22 (off South Africa in 36 fathoms).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 649 (Table Bay, False Bay, Agulhas Bank, to 43 fathoms).

Cantharus blochii (not Valenciennes) Pappe, Synops. Edible Fish Cape of Good Hope, 1853, p. 21.

Cantharus brama (not Bloch) Castelnau, Mém. Poiss. Afrique Austral., 1861, p. 31 (Table Bay).

Depth 2⅔; head 3¼. Snout 3⅖ in head from snout tip; eye 4, 1⅕ in snout, 1½ in interorbital; maxillary reaches eye, 2⅞ in head from snout tip; (teeth uniserial, none on vomer—Barnard) interorbital convex. Lower gill rakers 22, long, slender. Scales 80 (64 to 65—Barnard) in lateral line, 9 or 10 above, 20 below. D. XI, 12, I, fifth spine 2⅘ in total head length, second ray 3⅖; A. III, 11, third spine 3¼, first ray 3⅕; caudal 1⅛, deeply emarginate; least depth of caudal peduncle 3⅕; pectoral 3⅛ in combined head and body to caudal base; ventral 1⅔ in total head length. Silvery, tinged yellow above. Length 275 mm. (Boulenger.)

South Africa. According to Barnard bluish above, snout brownish, fins rosy, reaches 320 mm.

CAESIO XANTHONOTUS Bleeker

Caesio xanthonotus Bleeker, Nat. Tijds. Nederland. Indië, vol. 4, 1853, p. 466. Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 391 (copied). Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (24) 302, fig. 1; vol. 8, 1876–1877, p. 37 (Java, Amboina).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 20 (Manado, Celebes).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 203 (type of *Caesio teres*).—Tirant, Service Océanogr. Pêches Indo Chine, 6ᵉ Note, 1929, p. 168.

? *Caesio suevicus* Klunzinger, Fische Roth. Meer., 1884, p. 46, pl. 5, fig. 2. Red Sea.

Caesio teres Seale, Occas. Pap. Bishop Mus., vol. 6, No. 1, 1906, p. 44, fig. 13. Shortland Island, Solomons.

Depth 3⅕ to 3⅓; head 3⅓ to 3⅖, width 1⅘ to 2. Snout 4 to 4⅕ in head from snout tip; eye 4⅛ to 4⅔, little greater than snout to equal with age, 1⅛ to 1¼ in interorbital; maxillary reaches to or ⅛ in eye, expansion 2¼ to 2⅖, length 3 to 3¼; teeth small, simple, conic, uniform, uniserial in jaws; narrow band of minute teeth on vomer and palatines, none on tongue; interorbital 3¼ to 3⅘, convexly elevated; broad preopercle flange with parallel marginal venules, edge entire. Gill rakers 11+25, lanceolate, equal gill filaments or 1¾ in eye.

Scales 70 to 72 in lateral line to caudal base and 5 to 8 more on latter; tubular scales 52 to 54 in lateral line to caudal base and 5 or 6 more on latter; 7 to 9 scales above lateral line, 17 or 18 below, 22 to 24 predorsal extending forward opposite front pupil edge, 4 rows on cheek. Suprascapula entire. Scales with 11 or 12 basal radiating striae; apical denticles 78 to 90, minute short points, with 13 or 14 transverse series of basal elements; circuli very fine.

D. X, 15, i, fourth spine 2 to 2⅖ in total head length, first ray 2⅔ to 3¼; A. III, 12, i, third spine 3⅕ to 3¼, first ray 3¼ to 3⅖; caudal 1, deeply forked, with slender pointed lobes; least depth of caudal peduncle 3⅞ to 4; ventral 1⅗ to 1¾; pectoral 2⅘ to 3¼ in combined head and body to caudal base.

Back gray blue, with more or less brownish shades, lower sides and under surfaces white with silvery reflections. Iris yellowish white. Dorsals light brown, with narrow deep brown edge on soft dorsal. Anal and caudal pale yellowish, former with hind edges of lobes and latter with lower edge whitish. Pectoral yellowish, with axil deep dusky brown, also at base externally blackish brown triangular bar from origin of fin. Ventral yellowish white.

Red Sea, East Indies, Philippines, Melanesia. Previously I have examined of this species only the type of *Caesio teres*, based on a specimen certainly a synonym of the present species. *Caesio suevicus* Klunzinger is likely a synonym of this species, as all its structural characters agree. It is, however, described with the tips of the caudal deep black.

22973. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 165 mm.

8095 [958], 8096, 9485. Guntao Island. December 20, 1908. Length 195 to 207 mm.

21616, 21617. Makesi Island, Palawan. April 5, 1909. Length 163 to 183 mm.

16995, 16996. Mompog Island. March 3, 1909. Length 151 to 152 mm.

14965 [1268]. Refugio Island, Pasacao, Luzon. March 9, 1909. Length 225 mm. Top of head and anterior middle of side bright blue, changing somewhat to purplish; nuchal regions washed with yellow over this blue, yellow becoming more clear gradually posteriorly; when reaching peduncular region blue lost. Lower portions of body white, washed with red; tip of lower jaw dusky; colors of head and body purplish with exception of some blue stripes on side of head; base of dorsal yellowish, scales showing with bluish edges, tip of fin where unscaled olive yellow, extreme margin dusky; tips of front spines pink; middle edge of caudal lobes and tips of rays within fork vermilion; anal very pale vermilion, yellowish through center, but not exactly as bar, tips of soft portions bluish white; ventral rays pink, most distinct internally; pectorals very pale hyaline pink, axil entirely black and black showing as blotch on upper half of outer side of base.

13354, 13355. Sablayan, Mindoro. December 12, 1908. Length 129 to 140 mm.

14090. Sabtan Island. November 8, 1908. Length 180 mm.

21877. Singaan, Tawi Tawi Group. September 21, 1909. Length 125 mm.

5032, 5034 to 5036. Tataan, Tawi Tawi. February 21, 1908. Length 187 to 197 mm. [263.] Purplish indigo on top of head and toward middle of body; back from nuchal region washed with lemon yellow, becoming nearly cadmium on peduncle and caudal; on middle of sides scales with tips of pink and bases of blue, belly becoming nearly white, flushed with red on breast and lower head. Dorsal lemon yellow, tipped with black. Caudal tipped with vermilion in fork. Anal orange, tipped with white. Ventral pink, rays white. Pectoral pale hyaline pink, base white, axil with black blotch the same as upper half of base.

A1286, 13531. Uki, Bouro Island, Dutch East Indies. December 9, 1909. Length 90 to 290 mm. 3 examples.

13233. Doworra Island. December 2, 1909. Length 177 mm.

CAESIO PISANG Bleeker

Caesio pisang Bleeker, Nat. Tijds. Nederland. Indië, vol. 4, 1853, p. 113. Amboina; Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 391 (Amboina).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 38, pl. (56)334, fig. 2 (Java, Celebes, Ternate, Amboina).—Martens, Preuss. Exp. Ost Asien, 1876, p. 387 ("Yokohama").—Schmeltz, Cat. Mus. Godeffroy, No. 9, 1884, p. 29 (Mortlock).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 20 (North Celebes).—Steindachner, Abh. Senckenberg. Naturf. Ges., vol. 25, 1900, p. 418 (Ternate).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 285 (Saleyer).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 38 (Cebu).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 204 (compiled).

Depth 3⅘ to 4; head 3¼ to 3½, width 1⅞ to 2. Snout 3⅘ to 4 in head from snout tip; eye 3¼ to 4, greater than snout in young to subequal with age, greater than interorbital in young to 1¼ in interorbital with age; maxillary reaches ¼ in eye, length 3 to 3⅛ in head from snout tip; teeth minute, weak; interorbital 3⅖ to 3½, slightly convex. Gill rakers 10+24, lanceolate, slender, 1⅕ in gill filaments or ½ of eye.

Scales 61 to 63 in lateral line to caudal base and 3 or 4 more on latter; 7 scales above lateral line, 12 below, 26 to 28 predorsal forward opposite eye center, 4 or 5 rows on cheek to preopercle ridge. Scales with 10 or 11 basal radiating striae; apical denticles 55 to 70, small points, with 7 or 8 transverse series of basal elements; circuli fine.

D. X, 14, I, second spine 1½ to 1⅔ in total head length; A. III, 12, I, third spine 3¾ to 4⅘, first ray 3½ to 3⅗; caudal 1⅛ to 1⅕, well forked; least depth of caudal peduncle 3⅖ to 3⅔; pectoral 1⅛ to 1⅕; ventral 1⅔ to 1⅘.

Brown generally, grayish above, below paler to whitish. Dorsals brownish. Caudal pale, end of each lobe black.

East Indies, Philippines, Japan?, Micronesia. Known by its uniform coloration, the caudal alone contrasted with black tips.

12713. Atulayan Island, Lagonoy Gulf, Luzon. June 18, 1908. 2 examples, one 145 mm., other headless and little smaller.

One example. Butauanan Island, Luzon. June 13, 1909. Length 75 mm.

17423. Candaraman Island, North Balabac Strait. January 4, 1909. Length 143 mm.

7834, 7835. Cebu market. April 7, 1908. Length 119 to 120 mm.

21815. Cebu market. March 20, 1909. Length 74 to 86 mm. 3 examples. [1423.]

3254 [D. 5360]. Corregidor Light, N. 74° W., 6.9 miles (14° 21′ N., 120° 41′ E.), Manila Bay. February 8, 1909. Length 68 to 111 mm. 7 examples.

8139. Dasol Bay. May 9, 1909. Length 98 mm.

10425, 10426. East side of Verde Island. July 22, 1908. Length 120 to 124 mm.

7133, 7134, 7136 to 7138, 9927 to 9930. Inamuncan Bay, Mindanao. August 8, 1909. Length 98 to 142 mm.

18413. Limbones Cove, Luzon. January 17, 1908. Length 136 mm.

16715. Maculabo Island. June 14, 1909. Length 110 mm.

21089. Malanipa Island, east of Zamboanga. September 8, 1909. Length 117 mm.

19094, 19293, 19295 to 19298. Malapascua Island. March 16, 1909. Length 91 to 153 mm.

16175 to 16183. Mantacao Island, west coast of Bohol. April 8, 1908. Length 115 to 146 mm. [527.] Back purplish. Narrow axial stripe from above eye to caudal base yellow. Similar band under dorsal. Lower surface pale, more or less washed with scarlet, sometimes entirely scarlet, again fading. Dorsal basally like back, tip darker purplish and narrow scarlet submarginal band. Caudal and anal bright rosy, nearly scarlet, both lobes tipped with seal brown to nearly black. Paired fins paler rosy. Travels in schools, a large number of about same size killed at one shot. These fish are dried by stringing, as a gridiron between two sticks.

Eight examples. Maribojac Bay, Maribojac, Bohol. March 26, 1909. Length 71 to 133 mm.

7309 to 7313. Masbate, Masbate Island. April 21, 1908. Length 137 to 148 mm.

12545, 13442, 13444, 20569, 20641, 20642. Opol, Mindanao. August 4, 1909. Length 95 to 135 mm.

11217 to 11220. Paluan Bay, Mindoro. December 11, 1908. Length 115 to 125 mm.

17647, 17648. Pandanon Island. March 23, 1909. Length 128 to 146 mm. 8 examples.

13117 to 13119, 21022. Paron Point, Albay Gulf, Luzon. June 21, 1909. Length 99 to 114 mm.

11125. Pasacao, Ragay Gulf, Luzon. March 9, 1909. Length 146 mm.

6937. Port Galera, Mindoro. June 9, 1908. Length 165 mm.

12429, 12431, 20530. Port Galera. October 27, 1909. Length 150 to 154 mm.

10333. Port Maricaban. July 21, 1908. Length 143 mm.

20923. Puerta Princesa, Palawan. April 5, 1909. Length 130 mm.

12010 to 12013. San Miguel Harbor, Ticao Island. April 21, 1908. Length 120 to 122 mm.

12679, 12680, 17594. San Miguel Island, Tabaco Bay. June 4, 1909. Length 130 to 137 mm.

17982. Simaluc Sibi Sibi Island. September 23, 1909. Length 98 mm.

16039. Sulade Island, Jolo. September 18, 1909. Length 90 mm.

5122, 9401, 9402, 16686. Surigao, Mindanao. May 8, 1908. Length 157 to 180 mm.

18201, 18202. Tara Island. December 14, 1908. Length 139 to 150 mm.

8671. Tara Island. December 15, 1908. Length 115 mm.

8217 [168], 21277 to 21281. Tataan, Tawi Tawi. February 20, 1908. Length 108 to 119 mm. Upper half of body grass green, traversed by 3 narrow longitudinal stripes of bluish white; sometimes few scattered specks of violet showing on these lines; lower half of body white, with flush of pink; tip of caudal very dark red-brown and vermilion; dorsal hyaline, pink edged, scaled base same as body.

Two examples. Tataan. February 9, 1908. Length 82 to 97 mm.

15532, 15533. Tilig, Lubang. July 15, 1908. Length 118 to 126 mm.

Three examples. Tonquil Island, east of Gumila. September 14, 1909. Length 56 to 70 mm.

9474. Tumindao Island. February 26, 1908. Length 116 mm.

7915. Tutu Bay, second anchorage, Jolo. September 19, 1909. Length 112 to 155 mm.

19095. Varadero Bay, Mindoro. July 23, 1908. Length 117 mm.

6890. Danawan and Si Amil Islands, Borneo. July 26, 1909. Length 105 mm.

Four examples. Danawan and Si Amil Islands. September 27, 1909. Length 105 to 120 mm.

17315, 20526 [2008]. Sipadan Island, Borneo. September 28, 1909. Length 145 to 150 mm. Back and upper side purple; back with olive green over shade; top of head more or less olivaceous on naked parts; lower side of head, including preorbital and postorbital, with bright red wash, continuing somewhat on breast, behind breast silvery white; sulphur yellow spot begins on lower edge of temporal band, passes backward to middle of side, broadest through middle where to ⅓ diameter of orbit, unscaled dorsal hyaline vermilion; caudal with vermilion shades over dusky purplish, tips reddish brown; anal with slight tinge of vermilion on hyaline; ventrals and pectorals similar.

15832. Sitanki Reef, Borneo. September 24, 1909. Length 128 mm.

14139 to 14143, 21253, 21254. Tifu Bay, Bouro Island. December 10, 1909. Length 118 to 150 mm.

14069. Uki, Bouro Island. December 9, 1909. Length 115 to 133 mm. 14 examples.

Seven examples 2057. Buka Buka Island, Gulf of Tomini, Celebes. November. 20, 1909. Length 86 to 118 mm. Above purplish, centers of scales nearly sky blue, margins dark; lower portions silvery from tip of chin, which dusky to base of caudal; lemon yellow blotch runs from above eye backward and slightly downward to about tip of extended pectoral, this begins in front as point and broadens to about width of orbit over middle of pectoral and narrows again behind; in some specimens continues past middle of body; snout dusky; dorsal dusky vermilion, somewhat hyaline posteriorly; caudal about same shade as body, tips red brown; lower fins pink, pectorals same, with blackish area in axil; iris silvery.

16226. Cape Kait, Libani Bay, Celebes. December 29, 1909. Length 158 mm.

14869 to 14871. Dodepo and Pasejogo Islands, Gulf of Tomini, Celebes. November 16, 1909. Length 103 to 123 mm.

22675 to 22677. Labuandata Bay, Gulf of Boni, Celebes. December 18, 1909. Length 113 to 138 mm.

22882. Togian Bay, Togian Island, Celebes. November 19, 1909. Length 113 mm.

Four examples. Sadaa, Celebes. November 17, 1909. Length 112 to 116 mm.

12472 to 12477, 13129, 13846, 21088. Powati Harbor, Makyan Island. November 28, 1909. Length 110 to 162 mm.

9984. Maitara Island. November 26, 1909. Length 129 mm.

13225. Doworra Island. December 2, 1909. Length 130 mm.

20953. Tomahu Island. December 11, 1909. Length 62 to 85 mm. 4 examples.

8419. Nan Wan, Formosa. January 25, 1910. Length 172 mm.

8414. Hokuko, Soo Wan, Formosa. January 29, 1910. Length 140 mm.

CAESIO CHRYSOZONUS Cuvier

Caesio chrysozona (KUHL and VAN HASSELT) CUVIER, Hist. Nat. Poiss., vol. 6, 1831, p. 440. East Indies.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 392 (Moluccas).—KNER, Reise Novara, Fische, 1865, p. 65, (Java).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (29)307, fig. 2; vol. 8, 1876–1877, p. 39 (Nias, Java, Duizend Islands, Bawean, Celebes, Flores, Ternate, Amboina, Banda).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 657 (Muscat).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 533.—ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 54.—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (Bacon).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 285 (Macassar).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Oman).—PEARSON, Ceylon Administr. Report, 1915–18, pp. F8, F12, F16–F18.—OGILBY, Mem. Queensland Mus., vol. 6, 1916, p. 182 (Moreton Bay).—MALPAS, Ceylon Administr. Report, 1921, p. E5.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 278 (Bulan); 1929, p. 596 (Shanghai market).—TIRANT, Service Océanogr. Pêches Indo Chine, 6^{e} Note, 1929, p. 168.

Caesio chrysozonus FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 204 (compiled).

Caesio striatus (not RÜPPELL) BLEEKER, Natuur. Geneesk. Arch. Nederland. Indië, vol. 2, 1845, p. 521 (Java).

Pristipomoides aurolineatus DAY, Proc. Zool. Soc. London, 1867, p. 937. Madras.

Caesio chrysozona var. *aurolineatus* DAY, Fishes of India, pt. 1, 1875, p. 95, pl. 24, fig. 5.

Caesio coerulaureus (not LACÉPÈDE) FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 37 (Cebu).

Depth 3 to 3⅔; head 3 to 3⅓, width 1⅛ to 2. Snout 4 in head from snout tip; eye 3½ to 4, greater to subequal with snout or interorbital; maxillary reaches to or ⅕ in eye, length 2⅞ to 3 in head from snout tip; teeth minute, narrow bands in jaws or on vomer, none on palatines; interorbital 3 to 3⅕, broadly convex; preopercle edge minutely denticulate. Gill rakers 10+25, finely lanceolate, equal gill filaments or ½ of eye.

Scales 54 to 57 in lateral line to caudal base and 4 more on latter; 9 scales above lateral line, 15 below, 20 predorsal to occiput and 7 more forward opposite front eye edge, 4 rows on cheek. Scales with 8 or 9 basal radiating striae; apical denticles 55 to 70, with 11 or 12 transverse series of basal elements; circuli fine.

D. X, 14, I, third spine 1⅔ to 2 in total head length, first ray 3⅛ to 4⅙; A. III, 11, I, third spine 2¾ to 3⅒, first ray 2⅘ to 3⅛; caudal 3⅓ to 3⅖ in combined head and body to caudal base; least depth of caudal peduncle 3¼ to 3½; pectoral 1 to 1⅛; ventral 1⅗ to 2.

Back brown, lower half of body whitish. Iris grayish. Indistinct pale median lateral band from eye to caudal base, little above its middle. Fins brown, lower paler. Caudal ends black.

Muscat, India, East Indies, Philippines, Japan, Riu Kiu.

32732 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 153 mm.
56130 U.S.N.M. Bacon. Bureau of Fisheries (4010). Length 133 mm.
56209 U.S.N.M. Bacon. Bureau of Fisheries (3703). Length 133 mm.
56224 U.S.N.M. Bacon. Bureau of Fisheries (3702). Length 140 mm.
71841 U.S.N.M. Japan. *Albatross* Collection. Length 240 mm.
71883 U.S.N.M. Japan. *Albatross* Collection. Length 240 mm.
Two examples (with 75493 U.S.N.M.). Nafa, Okinawa, Riu Kiu. *Albatross* Collection, 1906. Length 236 to 240 mm.
84215 U.S.N.M. Cebu, Philippines. Dr. F. Baker. Lenth 205 mm. As *Caesio coerulaureus.*

CAESIO CAERULAUREUS Lacépède

Caesio caerulaureus Lacépède, Hist. Nat. Poiss., vol. 3, 1802, pp. 85, 86. Moluccas.—Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 434 (Red Sea; Gonfod; Trimquemale, Ceylon; Mauritius; Bourbon; Pondicherry).—Valenciennes, Hist. Nat. Poiss., vol. 6, 1830, p. 559 (note).—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1036 (Pinang).—Günther, Cat. Fish. Brit. Mus., vol., 1859, p. 392 (copied).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 25.—Playfair, Fishes of Zanzibar, 1866, p. 32 (Zanzibar).—Bleeker, Nederland. Tijdschr. Dierk., vol. 4, 1874, p. (117)150 (China).—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 437 (Mauritius).—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528 (Padang).—Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 266 (Apia).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (Bacon, Zamboanga, San Fabian).—Ogilby, Mem. Queensland Mus., vol. 2, Dec. 10, 1913, p. 92 (off Moreton Bay).—Regan, Ann. Durban Mus., vol. 2, 1918, p. 76 (Natal).—Fowler, Copeia, No. 58, June 18, 1918, p. 63 (Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 278 (Zamboanga; Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 204 (Kingsmills, Shortland Island, New Guinea, Apia); Proc. Acad Nat. Sci. Philadelphia, 1929, p. 638 (Padang; Shortland Island).—Tirant, Service Océanogr. Pêches Indo Chine, 6ᵉ Note, 1929, p. 168.

Caesio coerulaureus Kner, Reise Novara, Fische, 1865, p. 65 (Java).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 770 (Koseir, Red Sea).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 39, pl. (69) 347, fig. 4 (Sumatra, Nias, Singapore, Java, Bali, Celebes, Halmahera, Ternate, Batjan, Buru, Ceram, Amboina, Banda).—Klunzinger, Fische Roth.

Meer., 1884, p. 46.—Steindachner, Abh. Senckenberg. Naturf. Ges., vol. 25, 1900, p. 419 (Ternate).—Borsieri, An. Mus. Civ. Stor. Nat. Genova, vol. 41, 1904, p. 195 (Massaua).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 284 (Kangeang, Macassar; Kawa, Ceram; Saleyer; Binongka; Banda).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 650 (Natal Coast).

Caesio (Caesio) caerulaureus Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 170, pl. 16, fig. 2–a.

Smaris mauritianus Quoy and Gaimard, Voy. Uranie, Zool., December 18, 1824, p. 290, pl. 44, fig. 3. Mauritius.

Caesio azuraureus Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 130. Djedda.

Caesio striatus Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 131, pl. 34, fig. 1. Massaua.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 392 (Red Sea).—Playfair, Fishes of Zanzibar, 1866, p. 32 (Zanzibar, Seychelles).

Cacsio coeruleo-taeniatus (Ehrenberg) Cuvier, Hist. Nat. Poiss., vol. 3, 1830, p. 435. Red Sea. (Name in text.)

Caesio maculatus Cuvier, Hist. Nat. Poiss., vol. 6, 1830, p. 439. Vanicolo.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 391 (Madagascar, Hong Kong, Amboina).—Bleeker, Nederland. Tijdschr. Dierk., vol. 1, 1863, p. 344 (Madagascar); Atlas Ichth. Ind. Néerland., vol. 8, 1876–77, p. 38 (copied).—Schmeltz, Cat. Mus. Godeffroy, No. 6, 1877, p. 12 (Pelew Islands).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 20 (North Celebes; Cebu).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 122 (Majalibit Bay, Waigiu; Ambon).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 285 (Ambon).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 204 (compiled).

Coesia maculatus Elera, Cat. Fauna Filip., vol. 1, 1895, p. 477 (Cebu). (Misprint.)

Caesio azuror Thiollière, Fauna Woodlark, 1857, p. 162. Woodlark Island.

Caesio nori (Montrouzier) Thiollière, Fauna Woodlark 1857, p. 162 (name in synonymy).

Depth 3 to $3\frac{2}{3}$; head $2\frac{7}{8}$ to $3\frac{3}{5}$, width $1\frac{3}{4}$ to $2\frac{1}{8}$. Snout $3\frac{3}{5}$ to $4\frac{1}{3}$ in head from snout tip; eye 3 to 5, greater than snout in young to $1\frac{1}{5}$ with age, greater than interorbital in young to $1\frac{1}{5}$ with age; maxillary reaches to or $\frac{1}{5}$ in eye, expansion $2\frac{1}{5}$ to 3 in eye, length $2\frac{3}{4}$ to $3\frac{1}{5}$ in head from snout tip; row of minute, simple, conic teeth in each jaw, very minute or absent from palate; interorbital $3\frac{1}{4}$ to $3\frac{3}{4}$, broadly convex; preopercle with broad lobe, with concealed marginal denticles. Gill rakers 8+25, lanceolate, slender, little less than gill filaments or $1\frac{3}{4}$ in eye.

Scales 48 to 56 in lateral line to caudal base and 4 to 7 more on latter; 7 or 8 scales above lateral line, 11 to 13 below, 27 or 28 predorsal opposite front pupil edge of which 21 or 22 extend to occiput, 5 or 6 rows on cheek. Scales with 9 to 11 basal radiating striae; circuli very fine.

D. X, 14, i, third spine $1\frac{3}{5}$ to 2 in total head length, first ray $3\frac{1}{8}$ to $3\frac{1}{4}$; A. III, 12, i, third spine $3\frac{1}{8}$ to $3\frac{1}{4}$, first ray $3\frac{2}{5}$ to $3\frac{2}{3}$; caudal 1, deeply forked, lobes slender; least depth of caudal peduncle $3\frac{1}{3}$ to $3\frac{4}{5}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral $1\frac{3}{5}$ to $1\frac{3}{4}$.

Back brown, variably dark according to preservation. Below whitish. Iris slaty. Dorsals grayish, little darker terminally. Caudal light brown, each lobe with median broad dusky band longitudinally, contrasted at all ages. Other fins all pale, upper base of pectoral with neutral dusky triangular blotch, less than pupil in size.

Red Sea, Zanzibar, Natal, Mauritius, Bourbon, Réunion, India, Ceylon, Pinang, East Indies, Philippines, China, Queensland, Micronesia, Melanesia, Polynesia.

I follow Klunzinger in placing *Caesio striatus* Rüppell as a synonym of this species, differing only in the presence of 4 or 5 blackish longitudinal bands on the back.

Caesio maculatus Cuvier is described as metallic green with a mixture of yellow tints and scattered sky blue spots, a few turning to greenish. Although Günther admits the species, as it is without the yellow lateral band along the lateral line, this usually fades in most alcoholic specimens. I have examples exactly as Cuvier describes which are evidently *Caesio caerulaureus.*

11291, 11292, 14885, 18270, 18654, 18655. Alimango Bay, Burias Island. March 5, 1909. Length 151 to 201 mm.

Four examples. Balikias Bay, Lubang. July 14, 1909. Length 80 to 105 mm.

7957. Balukbaluk Island, south of Zamboanga. September 12, 1909. Length 158 mm.

14876, 14877. Bolalo Bay, Palawan. December 2, 1908. Length 163 to 201 mm.

9029. Bongao anchorage, Tawi Tawi Group. February 24, 1908. Length 161 mm.

12454, 12456, 15576, 15578. Bugsuk Island, Balabac. January 5, 1909. Length 99 to 189 mm.

7097. Busin Harbor, Burias Island. March 8, 1909. Length 187 mm.

15176. Busin Harbor. March 7, 1909. Length 178 mm.

21268. Busin Harbor. April 22, 1909. Length 132 mm.

15820, 22276, 22277. Butauanan Island. June 13, 1909. Length 70 to 90 mm. 10 examples.

15057, 15058. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 124 to 207 mm.

12734. Capulaan Bay, Pagbilao Island. February 24, 1909. Length 130 mm.

7624, 13018. Cataingan Bay, near ship anchorage, Masbate. April 17, 1908. Length 160 to 164 mm. Larger specimen with about 3 sepia stripes, first below base of dorsal, second behind eye to top of peduncle, third behind lower eye to lower base of caudal; these fading to greenish and bronzy; middle area between second and third stripes bright yellow, paler at either end; interspaces above bluish; snout above olive; V of bluish green between eyes, point nearly to tip of preorbitals; lower parts white; dorsal hyaline olive, with a bluish stripe beneath margin; caudal pale dusky olive, with narrow bluish margin within fork; lower fins pinkish; pectoral dusky; all membranes hyaline. Smaller specimen more yellowish; narrow median line from front of dorsal to interorbital region, another lying under base of anterior half of dorsal, running forward to eye; another from upper hind part of eye to top of peduncle; all pale yellow; paler and broader stripe through lower eye to base of caudal, across snout and preorbital grayish with blue and green, remainder very pale yellow; bronzy umber border on either side equal to stripe in width below, narrower above; breast and belly white, slightly washed with pink; dusky stripe from below pectoral base to axil of anal; bluish V before eye obscure; slate blue blotch vertically on shoulder.

13016, 16566 [532]. Catbalogan, Samar. April 15, 1908. Length 143 to 154 mm. Back dark hooker green; greenish orange stripe from above eye to caudal above lateral line; bright blue border one-half its width on either side; lower parts silvery, washed with pink; middle of side with brassy; tip of nose and lower jaw bright blue; dorsal color of adjacent body on its front margin on membranes and spines; caudal lobes olivaceous through middle, dashes of green at base, becoming blackish toward tips; edges of lobes pink; within fork same but paler; anal pink, silvery at base; paired fins pink; pectoral with a black blotch; iris silvery.

14456, 14457. Cuyo Island, Cuyo. April 9, 1909. Length 88 to 89 mm.

16326. Endeavor Strait, west coast of Palawan. December 23, 1908. Length 110 mm.

16655, 22332. Galera Bay, Mindoro. June 19, 1908. Length 68 to 73 mm.

18985. Gubat Bay, Luzon. June 23, 1909. Length 214 mm.

7442, 9484, 9486. Guntao Island, Palawan Passage. December 20, 1908. Length 226 to 240? mm.

6351, 7135. Inamucan Bay, Mindanao. August 8, 1909. Length 118 to 198 mm.

4720, 4721. Ligpo Point, Balayan Bay. January 18, 1908. Length 200 to 213 mm.

4669, 4670. Limbones Cove, Luzon. January 14, 1908. Length 202 to 220 mm.

16964. Lode Bay, Destacado Island. March 13, 1909. Length 243 mm.

14989, 15019. Makesi Island, Palawan. April 5, 1909. Length 124 to 143 mm.

5227, 5228. Malabon market. August 8, 1908. Length 177 to 212 mm.

14240. Mariveles wharf, Luzon. January 30, 1909. Length 107 mm.

16502 to 16504. Masamat Bay, Quinalasag Island. June 12, 1909. Length 69 to 78 mm.

17318, 17319. Near Palag Bay, Luzon. June 16, 1909. Length 180 to 189 mm.

13433. Opol, Mindanao. August 4, 1909. Length 178 mm.

One example. Pagapas Bay, Luzon. February 20, 1909. Length 152 mm.

One example. Pandanon Island. March 23, 1909. Length?

11746, 12053, 13855. Port Banalacan, Marinduque. February 23, 1909. Length 195 to 207 mm.

10497, 10725, 11017. Port Maricaban. July 21, 1908. Length 163 to 216 mm.

16531. Port Matalvi, Luzon. November 22, 1908. Length 157 mm.

13371, 17161. Port Matalvi. November 23, 1908. Length 151 to 156 mm.

One example. Port Palapag. June 2, 1909. Length 41 mm.

12711. Reef south lagoon, Tumindao Island. February 26, 1908. Length 157 mm.

10794, 10796, 14694. Refugio Island, Pasacao, Luzon. March 9, 1909. Length 108 to 213 mm. Bright cerulean blue above; tip of lower jaw and snout blackish; from midline of side downward color rapidly fades to silvery; blue extinct below level of upper base of pectoral; yellow stripe from above eye across posterior half of temporal band of scales, following above lateral line, ending at upper base of caudal fin; lateral line black, forming dusky diffused blotch at beginning above gill opening; dorsal pale gray, tip blackish, front ray dusky; second to about fifth or sixth spinous membrane tips hyaline, without duskiness; caudal with pale pinkish shade, purplish black stripe through each lobe of fin; anal white or hyaline; pectorals slightly dusky, membranes hyaline, pronounced black blotch on outer upper half of base and all of axil.

6304. Romblon Harbor. March 25, 1908. Length 182 mm.

22267, 22268. Rasa Island, Mantaquin Bay, Palawan. April 1, 1909. Length 110 to 113 mm.

13356, 13357. Sablayan, Mindoro. December 12, 1908. Length 145 mm.

27595. San Miguel Point, Tabaco Bay, Luzon. June 4, 1909. Length 153 mm.

12003 to 12005. San Miguel Harbor, Ticao Island. April 21, 1908. Length 162 to 198 mm.

Two examples. San Roque, Leyte. July 29, 1909. Length 101 to 108 mm.

6921, 6923. Santo Domingo, Batan. November 7, 1908. Length 246 to 250 mm.

5862. Shore below Mindanao River mouth, Mindanao. May 20, 1908. Length 195 mm.

4903, 4904. Sanga, near Siasi. February 17, 1908. Length 275 to 291 mm.

A631 to A633. Simaluc Island, north of Tawi Tawi. September 22, 1909. Length 250 to 305 mm.

16201, 16202. Taganak Island. January 7, 1909. Length 99 to 113 mm.

6511, 12488. Tara Island. December 14, 1908. Length 178 to 200 mm.

4919, 4920, 12201. Tataan, Simaluc Island. February 20, 1908. Length 150 to 245? mm.

Three examples. Tataan. February 19, 1908. Length 71 to 98 mm.

14293. Teomabal Island. September 18, 1909. Length 187 mm.

10459. Tilig. July 14, 1908. Length 70 mm.

15534, 15535. Tilig. July 15, 1908. Length 117 to 127 mm.

Thirty-five examples. Tonquil Island, east of Gumila. September 14, 1909. Length 52 to 69 mm.

6653. Tutu Bay, first anchorage. September 19, 1909. Length 145 to 160 mm. 2 examples.

243. Ulugan Bay, Palawan. December 29, 1908. Length 172 mm.

10414 to 10416, 10442, 19091 to 19093. Varadero Bay, Mindoro. July 23, 1908. Length 81 to 117 mm.

A1295. Uki, Bouro, Dutch East Indies. December 9, 1909. Length 260 mm.

17845. Bumbum Island, Borneo. September 25, 1909. Length 151 mm.

17706. Sipadan Island. September 28, 1909. Length 150 mm.

A689. Si Amil Island. September 26, 1909. Length 260? mm.

13487. Basa Reef, Gulf of Boni, Celebes. December 17, 1909. Length 204 mm.

14872. Dodepo and Pasejogo Islands, Gulf of Tomini, Celebes. November 16, 1909. Length 132 mm.

A1489. Cape Kait, Libani Bay, Celebes. December 29, 1909. Length 246 mm.

13463. Limbe Strait, Celebes. November 9, 1909. Length 175 mm.

A887, 12785. Limbe Strait. November 10, 1909. Length 60 to 260 mm.

21500. Gane Road, Gillolo Island. December 1, 1909. Length 116 mm.

Two examples. Gomomo Island, Pitt Passage. December 3, 1909. Length 90 to 107 mm.

17916, 18493, 18494. Tanakeke Island, Celebes. December 21, 1909. Length 55 to 152 mm.

Six examples. Tomahu Island. December 11, 1909. Length 44 to 55 mm.

Twenty-nine examples. Tomahu Island. December 12, 1909. Length 45 to 61 mm.

A1051. Tidore Island, south of Ternate. November 24, 1909. Length 265 mm.

30594 U.S.N.M. New Guinea. Australian Museum. Length 103 to 118 mm. 3 examples.

52469 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 86 to 108 mm. 5 examples.

56068 U.S.N.M. Bacon. Bureau of Fisheries (341). Length 190? mm.

56219 U.S.N.M. Bacon. Bureau of Fisheries (3482). Length 120 mm.

59002 U.S.N.M. Bacon. Bureau of Fisheries (3473, 3985). Length 138 to 194 mm. 2 examples.

72680 U.S.N.M. Java. Bryant and Palmer. Length 175 mm.

75493 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection 1906. Length 183 mm.

84218 U.S.N.M. Philippines. Dr. F. Baker. Length 206 mm. Two dark bands along back. As *Caesio pisang.*

The following are perhaps variations of *Casio caerulaureus*, but the dark band in each caudal lobe constantly narrower, also a single dark line separates brown of back from blue of flanks:

15459 to 15461. Bolinao Bay, Luzon. May 10, 1909. Length 78 to 80 mm.

9030. Bongao, Sulu Archipelago. February 24, 1908. Length 193 mm.

12457. Bugsuk, Balabac. January 5, 1909. Length 102 mm.

19649. Bulan Island, Samales Group. September 13, 1909. Length 148 mm.

16325. Endeavor Strait, north west coast Palawan. December 23, 1908. Length 114 mm.

12501. North west Verde Island. July 22, 1908. Length 214 mm.

12428, 12430, 20528, 20529. Port Galera, Mindoro. October 27, 1909. Length 149 to 172 mm.

15835. Sitanki Reef. September 24, 1909. Length 164 mm.

14292. Teomabal Island. September 18, 1909. Length 173 mm.

19192, 19193. Tulnalutan Island. September 9, 1909. Length 163 to 198 mm.

14070. Uki, Bouro. December 9, 1909. Length 107 mm.

Two examples. Limbe Strait, Celebes. November 10, 1909. Length 67 to 73 mm.

21473. Doworra Island. December 2, 1909. Length 93 mm.

9699, 9700, 9701, 14419. Talisse Island. November 9, 1909. Length 148 to 159 mm.

The following specimens all lack the black pectoral spot:

22412. Endeavor Strait, Palawan. December 23, 1908. Length 65 mm.

21975. Murcielagos Bay, Mindanao. August 9, 1909. Length 68 mm.

16587. Tulnalutan Island, east of Zamboanga. September 9, 1909. Length 65 mm.

13530, 13532. Uki, Bouro Island, Dutch East Indies. December 9, 1909. Length 130 to 299 mm.

22834, 22835. Daisy Island, west of Bumbum. January 6, 1910. Length 66 to 73 mm.

13539. Gane Road, Gillolo Island. December 1. 1909. Length 106 mm.

13539. Makyan Island. November 29, 1909. Length 201 mm.

27620 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 135 mm. When fresh in arrack deep steel blue black above, side and lower surface of head, caudal peduncle and caudal rosy red. Edges of caudal lobes and median rays black. Broad golden green longitudinal band from above eye to upper caudal lobe basally. Pectoral axil black.

CAESIO DIGRAMMA Bleeker

Caesio digramma Bleeker, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 180. Amboina; Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 40, pl. (56) 334, fig. 1 (Amboina).

Caesio diagramma Weber, Siboga Exp., vol. 57, Fische, 1913, p. 285 (Macassar; Saleyer).

Depth $3\frac{1}{2}$ to $3\frac{3}{5}$; head $3\frac{1}{4}$ to $3\frac{3}{5}$, width $1\frac{3}{5}$ to $1\frac{2}{3}$. Snout $3\frac{1}{8}$ to $4\frac{1}{8}$ in head from snout tip; eye $3\frac{3}{4}$ to $3\frac{4}{5}$, greater to subequal with snout, subequal with interorbital to $1\frac{1}{5}$ in interorbital; maxillary reaches eye, expansion $2\frac{2}{3}$ to $2\frac{3}{4}$ in eye, length $2\frac{7}{8}$ to 3 in head from snout tip; teeth simple, conic, uniserial, small, largely concealed; interorbital $3\frac{1}{4}$ to $3\frac{2}{5}$, broadly convex; preopercle flange with parallel venules, edge entire. Gill rakers 9+25, lanceolate, $1\frac{3}{5}$ in gill filaments, which $1\frac{1}{5}$ in eye.

Scales 69 to 72 in lateral line to caudal base and 7 or 8 more on latter; 8 scales above lateral line, 16 below, 30 predorsal forward opposite front pupil edge, 5 rows on cheek. Suprascapula entire. Scales with 10 or 11 basal radiating striae; apical denticles 67, with 11 transverse series of basal elements; circuli very fine.

D. X, 14, I, fourth spine $2\frac{1}{10}$ to $2\frac{1}{8}$ in total head length, first ray $2\frac{4}{5}$; A. III, 12, I, third spine $2\frac{7}{8}$ to 3, first ray 3 to $3\frac{1}{10}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, well forked; least depth of caudal peduncle $3\frac{1}{8}$ to $3\frac{2}{5}$; pectoral 1 to $1\frac{1}{5}$; ventral $1\frac{3}{4}$.

Back heliotrope purple down until midway on side, lower side and under surfaces white. Gray white line from each side of occiput along back above to last dorsal rays. Second gray white line from hind nostril back to suprascapula and then horizontally back to bases of upper caudal rays. Dorsals and caudal yellowish brown, end of each dark caudal lobe with dusky brown blotch about size of eye. Other fins whitish. Iris yellowish white.

East Indies, Philippines. Bleeker had a single example but 93 mm. long. My examples show the dark bands on the back pale and the caudal much more deeply forked. Weber reports 18 examples 80 to 120 mm.

[1281]. Philippines ? Length 213 mm.

12712. Atulayan Bay, Luzon. June 18, 1909. Length 143 mm.

Four examples. Guiniyan Island. June 4, 1909. Length 62 to 66 mm.

16371. Maculabo Island, Luzon. June 14, 1909. Length 175 mm.

19294. Malapascua Island, north of Celebes. March 16, 1909. Length 157 mm.

16501, 16505. Masamat Bay, Quinalasag Island. June 12, 1909. Length 52 to 75 mm.

6936, 6938. Port Galera, Mindoro. June 9, 1908. Length 198 to 200 mm.

11366. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 199 mm.

10792, 10793, 10795, 10797, 11265, 14963 [1269]. Refugio Island, Pasacao, Ragay Gulf, Luzon. March 9, 1909. Length 205 to 230 mm. Top of head behind interorbitals and back blue, becoming purplish some time after death; scales with darker margins, short stripe through their centers of brighter blue or green; extreme tip of lower jaw and snout dusky; a dash of yellow in front of each anterior nostril; narrow yellow stripe, beginning on nuchal region, passes backward about two or three scale rows below dorsal, joins fellow at dorsal axil, continues as single stripe about half length of top of peduncle; second yellow stripe begins over eye, passes through upper angle of gill opening under lateral line to about posterior fifth of soft dorsal, where crosses lateral line and ends above it at base of caudal fin; both yellow stripes with darker brownish borders, more pronounced on upper; lower portions of body white, washed red; dorsal fin red, membranes translucent; tip of soft portion slaty bluish. Caudal and anal pink, caudal with a blackish or red brown spot at tip of each lobe; anal with more pronounced red bar at base, tip becoming white; ventral pale, tips of rays red; pectoral very pale hyaline pink, black in axil externally, but no black showing on external base.

8670. Tara Island. December 15, 1908. Length 178 mm.

5033 [264]. Tataan Island, Tawi Tawi Group. February 21, 1908. Length 218 mm. Upper parts blue, with indigo shades; two longitudinal stripes. Dorsal pale scarlet terminally; caudal dull reddish, tips of lobes reddish brown. Anal, ventral and pectoral pink. Iris red and silvery. All of lower parts flushed with red. Specimen not in good condition for colors.

Subgenus ODONTONECTES Günther

Differs from preceding subgenera in presence of external row of denticles on jaws. Body uniform.

CAESIO CUNING (Bloch)

Sparus cuning BLOCH, Naturg. Ausländ. Fische, vol. 5, 1791, p. 31, pl. 263, fig. 1. East Indies.—WALBAUM, Artedi Pisc., vol. 3, 1792, p. 295 (on BLOCH).—FORSTER, Fauna Indica, 1795, p. 15.—LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, pp. 36, 113 (East Indies).

Cichla cuning SCHNEIDER, Syst. Ichth. Bloch. 1801, p. 336 (East Indies).

Caesio cuning CUVIER, Hist. Nat. Poiss., vol. 6, 1831, p. 444 (on BLOCH).—DAY, Fishes of India, pt. 1, 1875, p. 95; Fauna British India, Fishes, vol. 1, 1889, p. 532.—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (Bacon).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik, Klasse, vol. 26, 1913, p. 11 (Oman).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 203 (New Guinea); Proc. Acad. Nat. Sci. Philadelphia, 1929. p. 638 (Padang; types of *Caesio erythrochilurus;* Bacon).

Caesio erythrogaster (KUHL and VAN HASSELT) CUVIER, Hist. Nat. Poiss., vol. 6, 1830, p. 442, pl. 166. Java.—SCHMELTZ, Cat. Mus. Godeffroy, vol. 1, 1864, p. 8 (East Indies).—KNER, Reise Novara, Fische, 1865, p. 64 (Java; Singapore).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (34)312, fig. 3; vol. 8, 1876–1877, p. 36 (Sumatra, Nias, Batu, Singapore, Bintang, Banka, Duizend Islands, Java, Bawean, Celebes, Halmahera, Amboina, Ceram).—MARTENS, Preuss. Exp. Ost Asien, 1876, p. 387 (Singapore).—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 240 (New Guinea).—SEALE and BEAN, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 286 (Saleyer).

Caesio erythropterus BLEEKER, Nat. Tijds. Nederland. Indië, vol. 18, 1859, p. 365 (Banka) (error).

Odontonectes erythrogaster GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 265 (Amboina; Molucca Sea).—SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Viti Levu; Samoa).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).

Caesio erythrochilurus FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528, pl. 19, upper fig. Padang, Sumatra.

Caesio lunaris (not CUVIER) FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 278 (Bacon specimen).

Depth 2⅓ to 2⅘; head 3 to 3⅖, width 1⅞ to 2¼. Snout 3¾ to 4⅖ in head from snout tip; eye 3 to 4⅔, greater than snout in young to 1 to 1¼ with age, little greater than interorbital in young to 1⅖ to 1½ with age; maxillary reaches front eye edge or ¼ in eye, expansion 1¾ to 2⅓ in eye, length 2⅔ to 3⅛ in head; teeth villiform, in bands in jaws, on vomer and palatines, also pair of small protruding wide set canines in each jaw anteriorly; on each side of snout above premaxillary bony denticle like projection; narrow band of villiform teeth across vomer and small patch on each palatine; interorbital 3 to 3⅖, convexly elevated; preopercle flange entire, with parallel venules all along margin. Gill rakers 11 to 13+24 to 27, lanceolate, ⅞ of gill filaments or 1⅖ to 1⅗ in eye.

Scales 45 to 50 in lateral line to caudal base and 3 to 7 more on latter; 7 or 8 scales above lateral line, 3 to 7 below, 23 to 27 predorsal forward above hind nostril of which 6 to 20 to occiput, 4 or 5 rows on cheek. Suprascapula entire. Scales with 13 to 22 basal radiating striae; apical denticles 72 to 154, minute, feeble, each with 13 to 20 transverse series of basal elements; circuli very fine.

D. X, 15, I, third spine 2 to 2½ in total head length, first ray 2⅞ to 3½; A. III, 11, I, once abnormally 6, second spine 2½ to 3⅖, first ray 2⅘ to 3⅖; caudal 2¾ to 3¼ in combined head and body to caudal base, widely forked, with slender pointed lobes; pectoral 2⅔ to 3; least depth of caudal peduncle 2¾ to 3¼ in total head length; ventral 1⅖ to 1⅘.

Back drab brown, with lustrous lilac and purplish reflections. Lower sides and below whitish. Iris brownish. Dorsals and caudal dull brown, other fins lighter or whitish.

India, Singapore, East Indies, Philippines, Queensland, Polynesia. Bleeker's figure, though good in contour, squamation and other details, gives a poor if not misleading idea of the dentition. It does not show the outwardly flaring canines in the front of each jaw. In the young, however, they are more inconspicuous and erect, though easily evident to touch in the closed mouth. The young also have a dusky brown axillary blotch which is only partially exposed as a small inconspicuous dark spot at the pectoral origin. Bloch's figure of *Sparus cuning* is poor and is evidently rightly identified with *Caesio erythrogaster* Cuvier by Bleeker. The nominal *Caesio erythrochilurus* is synonymous. Specimens representing it are without any dark markings on the fins, except the whole upper border of both dorsals dusky. The lower preorbital rim is very narrow and has the maxillary approaching very close to the eye. Preservation seems to account for the presence of the dark streaks on the cheek. Sometimes a brilliant azure green shade or spot may be present at the bases of some of the scales of the back.

17705, 17770, 22110. Alimango Bay, Burias Island. March 5, 1909. Length 135 to 173 mm.

13936 to 13940, 16115 to 16118. Bolalo Bay, Palawan. December 21, 1908. Length 64 to 153 mm.

8369, 9011, 21266, 21267. Busin Harbor, Burias Island. April 22, 1908. Length 109 to 218 mm.

16678, 16679, 12795 to 12798, 22777. Busin Harbor. April 23, 1908. Length 108 to 163 mm.

15029 to 16031, 15177, 15178. Busin Harbor. March 7, 1909. Length 108 to 163 mm.

15499, 15501, 15821, 15822, 17192. Butauanan Island, Luzon. June 13, 1909. Length 57 to 117 mm. 9 examples.

16664. Canimo Island, near Daet, June 15, 1909. Length 155 mm.

11795, 15059. Canmahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 112 to 233 mm.

20723, 20724. Capunuypugan, Generale Island, Mindanao. May 10, 1908. Length 110 to 118 mm.

11857 to 11861. Caracaran Bay, Batan Island. June 8, 1909. Length 120 to 143 mm.

8580. Catbalogan, Samar. April 15, 1908. Length 118 mm.

Four examples. Endeavor Strait, northwest coast Palawan. December 22, 1908. Length 49 to 103 mm.

134, 135, 138, 7582, 15738, 16320 to 16324, 21532, 21533, 22413. Endeavor Strait. December 23, 1908. Length 63 to 277 mm. 14 examples.

7603. Endeavor Strait. December 24, 1908. Length 303 mm.

7282. Gigoso Point, Quinapundan Bay, Samar. July 28, 1909. Length [illegible] mm.

One example. Guiniyan Island. June 4, 1909. Length 48 mm.

9026. Langao Point, Luzon. June 24, 1909. Length 293 mm.

4662 to 4666. Limbones Cove, Luzon. January 14, 1908. Length 160 to 263 mm. 12 examples.

6057. Little Santa Cruz Island. May 28, 1908. Length 311 mm.

8824, 8828. Maculabo Island. June 14, 1909. Length 267 to 284 mm.

16913. Makesi Island, Palawan. April 5, 1909. Length 112 mm.

33. Malapascua Island. March 16, 1909. Length 87 mm.

6189. Mansalay, Mindoro. June 4, 1908. Length 286 mm.

16171 to 16174. Mantacao Island, west coast of Bohol. April 8, 1908. Length 113 to 115 mm.

6586, 6587. Maricaban, near Sepoc Point. July 21, 1908. Length 272 to 308 mm.

16498 to 16500, 21357, 21512. Masamat Bay, Quinalasag Island. June 12, 1909. Length 51 to 132 mm.

5570. Masbate Reef, Masbate. April 20, 1908. Length 291 ? mm.

11355, 16992. Mompog Island. March 3 1909. Length 160 to 173 mm.

8887, 17317. Near Palag Bay, Luzon. June 16, 1909. Length 220 to 300 mm.

9232. Opol, Mindanao. August 14, 1909. Length 300 mm.

Six examples. Pagapas Bay, Luzon. February 20, 1907. Length 105 to 126 mm.

13116. Paron Point, Albay Gulf, Luzon. June 21, 1909. Length 137 mm.

8987. Porongpong Island, Palumbanes Islands. June 10, 1909. Length 222 mm.

8008, 8010, 10773, 11743, 12052. Port Banalacan, Marinduque. February 23, 1909. Length 207 to 278 mm.

8188. Port Busin, Burias Island. March 8, 1909. Length 305 mm.

11256, 14709. Port Caltom, Busuanga Island. December 15, 1908. Length 182 to 220 mm.

18712. Port Dupon, Leyte. March 17, 1909. Length 232 mm.

6383. Port Jamelo, Luzon. July 13, 1908. Length 235 mm.

16527, 20794. Port Matalvi, Malapascua Island. November 22, 1908. Length 128 to 135 mm.

7263, 17158 to 17160. Port Matalvi. November 23, 1908. Length 113 to 248 mm.

Three examples 423. Port Uson, west of Pinas Island. December 17, 1908. Length 66 to 99 mm.

6136. Puerta Princesa, Palawan. April 5, 1909. Length 180 mm.

8787. Quinalasag Island. June 21, 1909. Length 295 mm.

8989, 13404, 13405. Rapurapu Island. June 22, 1909. Length 128 to 314 mm.

8216, 8217. Refugio Island, Pasacao, Ragay Gulf, Luzon. March 9, 1909. Length 212 to 255 mm. Four examples.

5278, 5290. Romblon Harbor. March 25, 1908. Length 190 to 218 mm. Dusky hooker green above anteriorly, washed with yellow posteriorly, caudal dusky greenish yellow; lower parts brilliant geranium, scales bordered with silvery white; head with three stripes of slaty purple; first above eyes, obscurely across interorbital region; another behind eye; third across cheek from upper corner of mouth. Dorsal edged with dusky; centrally with rosy wash; anal vermilion, margined with white, yellowish centrally; ventral rays vermilion, front white and membranes hyaline; pectoral rays dusky geranium, membranes hyaline, upper axil blackish; iris with red, tip of nose and chin dusky; supraorbital and opercle behind eye washed with yellow, purplish under scales.

5481, 5486, 12265 to 12267. San Juanico Strait, Leyte, Samar. April 13, 1908. Length 190 to 214 mm.

12006 to 12009. San Miguel Harbor, Ticao Island. Length 140 to 210 mm.

17592, 17593. San Miguel Island, Tabaco Bay. June 4, 1909. Length 182 to 194 mm.

6555, 6556, 9123. San Roque, Leyte. July 29, 1909. Length 64 to 247 mm. 13 examples.

11715 to 11717, 14178. Santa Cruz Island, Marinduque. April 24, 1908. Length 102 to 134 mm.

21201 to 21203. Sianga Bay. May 17, 1908. Length 94 to 102 mm.

5221 [121], 5222 [122]. Siasi Island market. February 17, 1908. Length 210 to 212 mm.

9404, 9405, 16687, 20020. Surigao, Mindanao. May 8, 1908. Length 107 to 126 mm.

7347, 7355. Tara Island. December 14, 1908. Length 288 to 318 mm.

9435. Tulayan Island. September 15, 1909. Length 183 mm.

16086, 16390 to 16392. Ulugan Bay, Oyster Inlet, Palawan. December 28, 1908. Length 53 to 109 mm.

Four examples. Ulugan Bay, near Baheli River mouth. December 28, 1908. Length 68 to 71 mm.

242, 7694. Ulugan Bay, Palawan. December 29, 1908. Length 130 to 325 mm.

9153, 19040. Varadero Bay, Mindoro. July 23, 1908. Length 173 to 183 mm.

5998. Zamboanga market. May 26, 1908. Length 268 mm.

A675. Sitanki Reef, Borneo. September 24, 1909. Length 307 mm.

19893, 19894. Daisy Island, west of Bumbum Island, Borneo. January 6, 1910. Length 84 to 93 mm.

A688. Si Amil Island, Borneo. September 25, 1909. Length 303 mm.

A1325. Tifu Bay, Bouro Island. December 10, 1909. Length 304 mm.

A1258. Uki, Bouro Island. December 9, 1909. Length 293 mm.

A948. Dodepo and Pasejogo Islands, Celebes. November 16, 1909. Length 298 mm.

A898. Limbe Strait, Celebes. November 10, 1909. Length 250 mm.

A956. Sadaa Island, Gulf of Boni, Celebes. November 17, 1909. Length 290 mm.

17917, 18490, 18491. Tanakeke Island, Flores Sea. December 21, 1909. Length 120 to 127 mm.

30666 U.S.N.M. New Guinea. Australian Museum. Length 98 to 117 mm. Two examples. As *Odontonectes erythrogaster*.

56033 U.S.N.M. Zamboanga. Bureau of Fisheries (4043). Length 243 mm.

56069 U.S.N.M. Bacon. Bureau of Fisheries (3626). Length 168 mm.

56268 U.S.N.M. Bacon. Bureau of Fisheries (3624). Length 163 mm.

58036 U.S.N.M. Zamboanga. Dr. E. A. Mearns 1906. Length 330 mm. As *Caesio erythrogaster*.

Genus PINJALO Bleeker

Pinjalo Bleeker, Natuur. Genesk. Arch. Nederland. Indië, vol. 2, 1845, p. 521. Type *Pinjalo typus* Bleeker, monotypic.

Body ovoid, well compressed. Head rounded, compressed. Upper jaw moderately protractile. Lower jaw slightly protruding. Teeth in bands in jaws and on vomer, none on palatines. Branchiostegals 6. Scales 70 in lateral series, ctenoid, in oblique rows on sides of body. Head with temporal region and opercles all scaled. Dorsal scaled. Dorsal spines 11, rays 14 or 15. Anal spines 3, rays 10 or 11.

PINJALO TYPUS Bleeker

Pinjalo typus Bleeker, Natuur. Genesk. Arch Nederland. Indië, vol. 2, 1845, p. 521. Batavia, Java; Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 33 (Sumatra, Singapore, Java, Celebes).—Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 21 (Cavite).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 81 (San Fabian; Bulan).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 638 (Philippines).

Caesio pinjalo Bleeker, Verh. Batav. Genootsch. (Maenoid.), vol. 23, 1850, p. 10. Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 391 (copied.)—Day, Fishes of India, pt. 1, 1875, p. 94, pl. 24, fig. 4.—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873-1876, pl. (14) 292, fig. 3.—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 155 (Singapore).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 532, fig. 160.—Tirant, Service Océanogr. Pêches Indo Chine, 6^e Note, 1927, p. 168.

Odontonectes pinjalo Day, Fishes of India, pt. 1, 1875, p. 29 (name).

Pinjalo pinjalo FOWLER, Copeia, No. 58, June 18, 1918, p. 63 (Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 278 (Orion; Philippines).

Mesoprion mitchelli GÜNTHER, Ann. Mag. Nat. Hist., ser. 3, vol. 19, 1867, p. 257, pl. 9. Madras Museum.

Odontonectes erythrogaster (not CUVIER) FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528 (Padang).

Depth 2⅖ to 2⅘; head 3 to 3⅓, width 1⅘ to 2⅛. Snout 3½ to 3⅘ in head from snout tip; eye 3½ to 4½, 1 to 1¼ in snout, 1⅛ to 1½ in interorbital; maxillary reaches eye or to ¼ its diameter, expansion 2⅓ to 3 in eye, length 3 to 3⅛ in head from snout tip; lips rather narrow, fleshy; teeth very small, somewhat biserial with outside row little larger; palate and tongue edentulous; interorbital 3 to 3½, elevated convexly; preopercle edge finely serrated, angle rounded. Gill rakers 8+14, lanceolate, equal gill filaments or little over ½ of eye.

Scales 70 along lateral line to caudal base and about 12 more on latter; tubular scales 47 to 50 in lateral line to caudal base and 10 more on latter; 10 or 11 scales above lateral line to caudal base, 19 or 20 below, 19 to 21 predorsal forward to occiput, 5 to 7 rows on cheek. Scales with 12 to 15 basal radiating striae; 80 to 90 apical denticles, with 10 to 14 transverse series of basal elements; circuli fine.

D. XI, 14, I, fourth spine 2 to 2½ in total head length, eleventh spine 2⅔ to 2¾, first ray 2⅖ to 2½; A. III, 10, I, third spine 2¼ to 2⅖, first ray 2⅛ to 2⅕; caudal 2¾ to 2⅘ in combined head and body to caudal base; least depth of caudal peduncle 2⅖ to 2⅗ in total head length; pectoral 1 to 1⅛; ventral 1½.

Brown generally, little paler below. Each row of scales on back and sides above shows dark median streak. Vertical fins and ventrals dusky on edges and terminally.

India, Singapore, East Indies, Philippines. A well-marked species known by the oblique rows of scales on the body.

8454. Cebu market. March 27, 1909. Length 455 mm. No dark stripe through each scale row.

22554. Manila market. January 13, 1908. Length 126 mm.

6749, 6750. Manila market. April 16, 1909. Length 350 to 353 mm.

6761, 21156, 21157. Manila market. April 21, 1909. Length 180 to 293 mm. Dull reddish, paler below. Narrow brownish red stripe through each scale row, oblique above lateral line. Ventral edges dark.

6917. Tacloban market. July 25, 1909. Length 148 mm.

6694. Hong Kong market, China. August 13, 1908. Length 265 mm.

A1020. Buka Buka Island, Gulf of Tomini, Celebes. November 20, 1909. Length 128 mm.

55987. U.S.N.M. Bulan, Philippines. Bureau of Fisheries (4038). Length 305? mm. As *Caesio pinjalo*.

56281. U.S.N.M. Cavite. Dr. G. A. Lung. Length 72 to 130 mm. 4 examples. As *Pinjalo pinjalo*.

27617 to 27619 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 210 to 237 mm. When fresh in arrack rich olivaceous brown above, sides and lower surfaces deep rosy. Narrow lines, deep rosy below, but turning dark brown above, extend in courses of scales obliquely to dorsal base. Iris dull orange. Dorsals mostly olivaceous, submarginally broadly dusky gray, deepest or almost pure black along edges. Caudal base yellowish, becoming grayish and dusky, then deepens into blackish along edges. Anal and ventral deep citron yellow. Pectoral bright orange, axil pale.

Genus MIROLABRICHTHYS Herre

Mirolabrichthys Herre, Philippine Journ. Sci., vol. 32, No. 3, March 1927, p. 413. Type *Mirolabrichthys tuka* Herre, monotypic.

Entonanthias Jordan and Tanaka, Ann. Carnegie Mus., vol. 17, 1927, p. 385. Type *Entonanthias pascalus* Jordan and Tanaka, orthotypic.

Body moderately long, compressed. Head moderate, compressed. Snout produced in flexible, conic, pointed papilla, with age extended little forward of maxillary. Eye moderate, along hind edge with row of small papillae. Maxillary long, reaches below hind part of eye. Teeth villiform, in bands in jaws, 2 pairs of canines anteriorly also 1 each side below. Palate and tongue toothless. Gill rakers lanceolate, rather fine. Scales small, ctenoid, each with small auxiliary basal scale. Dorsal fin deeply notched, appearing as 2 nearly separated fins. Soft dorsal, anal and ventrals sometimes with filaments.

ANALYSIS OF SPECIES

a^1 Snout with pointed conic papilla, extends slightly forward of maxillary; soft dorsal, anal and ventral filamentous------------------------------**tuka**.

a^2. Snout without papilla, jaws even in front; fins without filaments-----**waitei**.

MIROLABRICHTHYS TUKA Herre

Mirolabrichthys tuka Herre, Philippine Journ. Sci., vol. 32, No. 3, March 1927, p. 413, pl. 1. Maricaban Island.

Entonanthias pascalus Jordan and Tanaka, Ann. Carnegie Mus., vol. 17, 1927, p. 385, pl. 34, fig. 2. Naha, Okinawa.

Depth $2\frac{7}{8}$ to $3\frac{1}{4}$; head 3 to $3\frac{1}{3}$, width $2\frac{1}{10}$ to $2\frac{1}{8}$. Snout $3\frac{2}{5}$ to 5 in head, with age a pointed, flexible, conic papilla like point extending beyond premaxillary for space half of eye diameter; eye $3\frac{1}{2}$ to $4\frac{1}{3}$, its edge along posterior half of orbit with single row of small fleshy points or papillae, much greater than snout in young to $1\frac{1}{3}$ with age, 1 to $1\frac{1}{3}$ in interorbital; maxillary reaches opposite hind pupil edge in young till opposite or little behind eye edge with age, expansion $1\frac{2}{5}$ to 2 in eye, length $1\frac{3}{4}$ to 2 (with age includes rostral papilla) in head; bands of fine teeth in each jaw anteriorly, narrowing laterally, 2 pairs of canines anteriorly in jaws, often each double and directed more or less anteriorly, also mandible with median lateral recurved canine each side; tongue and palate toothless; interorbital $3\frac{1}{5}$ to $2\frac{2}{3}$, broadly convex; preopercle edge finely denticulate; opercle with 2 spines. Gill rakers 9+22 lanceolate, greatly longer than gill filaments or $1\frac{1}{4}$ in eye.

Scales 43 to 46+2 to 4 in lateral line; 5 above, 12 below, 28 to 30 predorsal; 10 rows down across cheek to preopercle angle, of which last 3 on preopercle flange; 2 or 3 transverse rows of scales on maxillary expansion. Scales with 8 to 13 basal radiating striae; 27 to 77 apical denticles; circuli fine.

D. X, 14, I or 15, I, fifth spine $2\frac{3}{5}$ to $2\frac{4}{5}$ in total head length, tenth ray $3\frac{1}{8}$ to $3\frac{2}{5}$ in combined head and body to caudal base; A. III, 7, third spine $2\frac{7}{8}$ to 3 in total head length, third ray $1\frac{1}{10}$ to $2\frac{1}{5}$; caudal deeply forked, pointed lobes ending in filaments, $1\frac{4}{5}$ to 3 in combined head and body to caudal base; pectoral $3\frac{1}{4}$ to $3\frac{3}{5}$; ventral $2\frac{2}{3}$ to $4\frac{3}{4}$, first ray ending in long filamentous point with age; in young, pectoral longer than ventral.

In alcohol head and body brown, below pale to whitish. Fins all pale, middle of each caudal lobe in some examples with narrow white edges. Iris gray to whitish.

East Indies and Philippines. Changes with age are considerable. The young without the rostral proboscis and the fins without prolonged filaments, though the hind orbital edge has a distinct row of papillae.

Originally described as " close to *Caesio* but is markedly differentiated from it " thus the inference is that Herre considered it a lutjanid? The original specimens consisted of a type and 3 paratypes, 84 to 94 mm. in length, collected at Maricaban Island in a school of *Caesio*. Beyond this no suggestion of its relationship is given. I am therefore quite interested to locate the rather extensive series of specimens enumerated below. Though for the present retaining them with or near *Caesio*, they really greatly suggest various aberrant members of the subfamily Anthiinae in the Serranidae. The rostral papilla, edentulous palate and filamentous fins are all a combination of characters valid generically. The dentition, especially in the arrangement of the canines, approaches closely that of most of the small Anthiinae and not at all the type found in any species of *Caesio*. Likewise the squamation, with the presence of numerous small auxiliary basal scales. In most ways the species have an aberrant physiognomy of the Anthiinae.

Two examples. Cagayan Island. March 31, 1909. Length 83 to 87 mm. [1491.]

6065. Cagayan Island. March 31, 1909. Length 45 to 85 mm. Lernean below left pectoral axil. 13 examples.

Nine examples. Caracaran, Batan Island. June 8, 1909. Length 46 to 95 mm.

15114 to 15117. Dupon Port, Leyte. March 17, 1909. Length 92 to 116 mm.

One example. Malapascua Island. March 16, 1909. Length 104 mm. [1372.]

Two examples. Maribojoc Bay, Maribojoc, Bohol Island. March 26, 1909. Length 96 to 100 mm.

One example. Tapiantana Island. September 13, 1909. Length 75 mm. [1923.]

16256. Teomabal Island, Jolo. September 18, 1909. Length 93 mm.

6900 to 6903. Danawan and Si Amil Islands, Borneo. September 26, 1909. Length 88 to 97 mm.

8915. Mabul Island. September 29, 1909. Length 53 mm.

9505, 21429. Dodepo and Pasejogo Islands, Celebes. November 16, 1909. Length 66 to 78 mm. [2045.] 4 examples.

12783, 12784. Limbe Strait, Celebes. November 10, 1909. Length 102 to 107 mm.

18138, 18326 to 18330. Malibagu Point, Gulf of Tomini, Celebes. November 21, 1909. Length 60 to 82 mm. 9 examples.

Twelve examples. Gulf of Tomíní, Celebes. November 17, 1909. Length 56 to 80 mm.

21519. Doworra Island. December 2, 1909. Length 64 mm.

Three examples. Togian Bay, Togian Island. November 19, 1909. Length 63 to 80 mm. Each scale on back with dark brown spot, under surface and all fins whitish.

One example. Kayoa Island. November 29, 1909. Length 71 mm.

Three examples. Powati Harbor, Makyan Island. November 28, 1909. Length 78 to 84 mm. [2082.]

Two examples. Powati Harbor. November 29, 1909. Length 83 to 84 mm.

MIROLABRICHTHYS WAITEI, new species[15]

Depth 3¼ to 3½; head 3⅖ to 3⅗, width 1⅞ to $2\frac{1}{10}$. Snout 4⅗ to 5 in head from snout tip; eye 3⅖ to $4\frac{1}{10}$, greater than snout, 1 to 1⅛ in interorbital and hind orbital edge with row of low small papillae; maxillary reaches ¾ to ⅘ in eye, expansion 1½ to 1⅔ in eye diameter, length 2 to 2⅕ in head from snout tip; teeth uniserial in jaws, pair of wide set canines above often double and pair of lower front canines recurved outward, also 2 recurved canines medially on each mandibular ramus; palate and tongue edentulous; interorbital 3⅖ to 3⅘, convex; preopercle edge denticulate; one large spine on opercle, other not distinct. Gill rakers 10+17, finely lanceolate, much larger than gill filaments or 1¼ in eye.

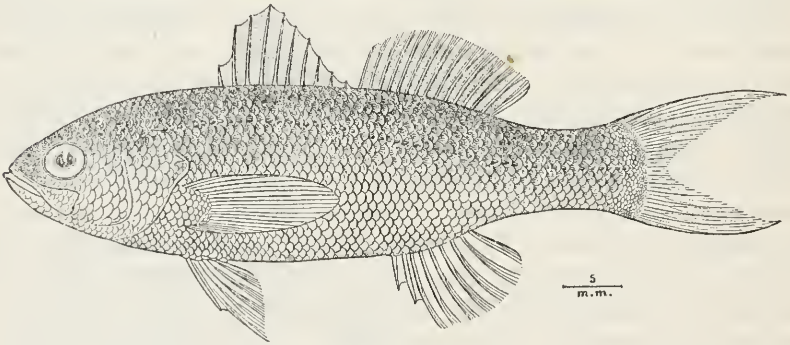

Figure 16.—Mirolabrichthys waitei, new species. Type

---

[15] For the late Edgar Ravenswood Waite, the distinguished Australian zoologist, in appreciation of his many contributions to ichthyology.

Scales 45 to 49+1 or 2 in lateral line; 5 above, 12 below, 28 to 32 predorsal; 11 scales transversely over cheek from eye to preopercle angle, of which last 4 on preopercle flange; 4 scales transversely across maxillary expansion; few small scales along body at bases of soft dorsal and anal; caudal finely scaled over most of its extent; few small basal scales on paired fins. Scales with 11 to 13 basal radiating striae; apical denticles 46 to 54; circuli moderate.

D. IX or X, 16, I, third spine 1⅘ to 2 in total head length, ninth ray 2 to 2⅛; A. III, 7, I, third spine 3⅔ to 3¾, third ray 1⅞ to 2; caudal 2⅘ to 3⅓ in combined head and body to caudal base, deeply forked and slender lobes slightly pointed; pectoral 3⅓ to 3½; ventral 1⅓ to 1⅖ in head; least depth of caudal peduncle 2⅕ to 2⅓.

In alcohol brown above, pale to whitish below. Each scale on back with obscure darker brown spot. Lower surfaces with silvery tints. Iris gray to whitish. Fins all pale.

Diagnosis.—Differs from *Mirolabrichthys tuka* in the absence of the rostral papilla, the jaws even in front, fewer gill rakers and fins without filaments.

Type.—Cat. No. 89997, U.S.N.M.

Seven examples. Port Galera, Mindoro. October 27, 1909. Length 53 to 68 mm.

Nine examples. Port Maricaban, Luzon. July 21, 1908. Length 50 to 68 mm. (Type.)

Nine examples. Sadaa Island, Celebes. November 17, 1909. Length 47 to 56 mm.

Eight examples. Una Una Road, Binang Unang Island, Gulf of Tomini, Celebes. November 18, 1909. Length 46 to 60 mm.

Genus PARAPRISTIPOMA Bleeker

Parapristipoma Bleeker, Arch. Néerland. Sci. Nat. Harlem, vol. 8, 1873, p. 21. Type *Perca trilineata* Thunberg, monotypic.

Body rather elongate. Preorbital narrow, edge unarmed. Preopercle edge with fine serrae. Gill rakers 24 below on first arch, rather long and slender. Chin without central grove or barbels. Scales small, more than 100 in lateral series. Snout, jaws and preorbital scaly. Soft vertical fins scaly basally. Anal with scaly sheath. Dorsals continuous, without antrorse spine in front, erect spines 13 or 14. Anal spines 3, rays 8. Caudal emarginate or forked.

PARAPRISTIPOMA TRILINEATUM (Thunberg)

Perca trilineata Thunberg, Kon. Vet. Acad. Nya Handligar, vol. 14, 1793, p. 55, pl. 5, fig. r. Japan.

Parapristipoma trilineatum Bleeker, Arch. Néerland. Sci. Nat. Harlem, vol. 8, 1872, p. 22 (Kuiseiu, Nagasaki; China).—Jordan and Thompson, Proc.

U. S. Nat. Mus., vol. 41, 1912, p. 544 (Tokyo, Misaki, Enoshima, Wakanoura, Nagasaki).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., Vertebr., 1920, p. 149 (Boshiu).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 591 (Nagasaki), p. 608 (Hong Kong).

Pristipoma japonicum Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 288. Japan.—Schlegel, Fauna Japon., Poiss., pts. 2–4, 1843, p. 60, pl. 26, fig. 2 (southwest coast of Japan).—Richardson, Ichth. China Japan, 1846, p. 228 (coast of China and Japan).—Bleeker, Act. Soc. Sci. Ind. Néerland., vol. 3, No. 10, 1857–1858, p. 3 (Kioesio), p. 5 (Japan), p. 14.—Günther, Cat. Fish, Brit. Mus., vol. 1, 1859, p. 303 (Chinese Seas).—Steindachner and Döderlein, Denkschr. Akad. Wiss. Wein, Math.-nat. Klasse, vol. 48, pt. 1, 1883, p. 10 (Tokyo).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, pp. 54, 55.—Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 47 (Yokohama).

Diagramma japonicum Bleeker, Verh. Batav. Genootsch. (Japan), vol. 25, No. 7, 1852, p. (12)31 (Nagasaki).

Plectorhynchus ocyurus Jordan and Evermann, Proc. U. S. Nat. Mus., vol. 25, 1903, p. 348, fig. 19. Formosa.—Jordan and Richardson, Mem. Carnegie Mus., vol. 4, No. 4, August 28, 1909, p. 187, fig. 17 (copied).

Diagramma aporognathus Regan, Ann. Mag. Nat. Hist., ser. 7, vol. 16, 1905, p. 364. Inland Sea of Japan.

Depth 3 to $3\frac{2}{3}$; head $3\frac{2}{5}$ to $3\frac{1}{2}$, width $1\frac{4}{5}$ to $2\frac{1}{4}$. Snout 3 to $3\frac{1}{4}$ in head from snout tip; eye $3\frac{1}{3}$ to $4\frac{1}{8}$, 1 to $1\frac{1}{5}$ in snout, greater than interorbital in young to $1\frac{1}{10}$ to $1\frac{1}{5}$ with age; maxillary reaches $\frac{1}{8}$ in eye, expansion $1\frac{3}{4}$ to 2 in eye, length $2\frac{7}{8}$ to $3\frac{1}{8}$ in head from snout tip; teeth fine, in rather narrow bands in jaws of 5 irregular series, with outer row little enlarged; palate and tongue edentulous: interorbital $3\frac{1}{4}$, convexly elevated; preopercle edge with 35 rather slender well exposed denticles, most on vertical edge. Gill rakers 17 or 18+25, slender, lanceolate, slightly less than to equal to gill filaments or $1\frac{3}{4}$ to $1\frac{7}{8}$ in eye.

Scales 90 to 92 in lateral line (counted along close above) to caudal base and 12 more on latter; pores 53 in lateral line to caudal base and 6 more on latter; 17 scales above lateral line, 16 below; 50 to 67 predorsal, 14 to 17 rows on cheek. Suprascapula with several blunt spines. Scales with 5 basal radiating striae; apical denticles 55, small, slender, with 10 transverse series of basal elements; circuli very fine.

D. XIV, 17, i or 18, i, fourth spine $2\frac{1}{5}$ to $2\frac{1}{2}$ in total head length, first ray 3 to $3\frac{7}{8}$; A. III, 7, i, third spine $2\frac{1}{10}$ to $2\frac{1}{3}$, first ray 2 to $2\frac{1}{8}$?; caudal $1\frac{1}{10}$ to $1\frac{1}{4}$, concave behind; least depth of caudal peduncle $1\frac{1}{4}$ to $2\frac{4}{5}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{3}$; ventral $1\frac{2}{5}$ to $1\frac{3}{4}$.

Largely uniform brown with age, little paler below. On body each row of scales with streak formed obliquely as scales slope upward, both above and below lateral line. Iris reddish brown. Fins all more or less darker brown than body. Brassy to silvery reflections on side of head below and abdomen. In smaller or young examples 3 whitish longitudinal bands, lowest from eye to bases of lower median caudal rays; median from above eye to upper edge of caudal peduncle. Iris white.

China, Formosa, Japan. There is no question but *Plectorhynchus ocyurus* Jordan and Evermann is a synonym of the present species. It is based on an old example 318 mm. long. In their key to the Japanese genera Jordan and Thompson have transposed the formula for the gill rakers for *Parapristipoma* and *Plectorhynchus*, so they should really read the opposite.

6809. Kowloon market, China. September 19, 1909. Length 310? mm.
22545 U.S.N.M. Japan. Japanese Government. Length 280 mm.
59731 U.S.N.M. Urado, Japan. Dr. H. M. Smith. Length 267 mm.
71180 U.S.N.M. Misaki. *Albatross* Collection. Length 123 to 130 mm. 2 examples.
71301 U.S.N.M. Misaki. *Albatross* Collection. Length 125 to 187 mm. 3 examples.
71350 U.S.N.M. Misaki. *Albatross* Collection 1906. Length 200 to 224 mm. 2 examples.
75470 U.S.N.M. Wakanoura. Jordan and Snyder. Length 45 to 155 mm. 4 examples.
75471 U.S.N.M. Tokyo. Jordan and Snyder. Length 128 to 185 mm. 4 examples.
75472 U.S.N.M. Enoshima. Jordan and Snyder. Length 130 mm.

Genus PLECTORHINCHUS Lacépède

Plectorhinchus LACÉPÈDE, Hist. Nat. Poiss., vol. 3, 1802, p. 134. Type *Plectorhinchus chaetodonoides* LACÉPÈDE, monotypic.
Plectorhincus DUMÉRIL, Zool. Analyt., 1806, p. (126) 340. Type *Plectorhinchus chaetodonoides* LACÉPÈDE.
Plectorhynchus CUVIER, Règne Animal, vol. 2, 1817, p. 344. Type *Plectorhinchus chaetodonoides* LACÉPÈDE.
Gaterin FORSKÅL, Descript. Animal., 1775, p. (12) 45. Type *Sciaena gaterina* FORSKÅL, assumed tautotype through vernacular. (Inadmissible.)
Diagramma OKEN, Isis, 1817, p. 782. Type *Anthias diagramma* BLOCH, monotypic. (On the *Diagrammes* CUVIER, Règne Animal, vol. 2, 1817, p. 280.)
Pseudopristipoma SAUVAGE, Bull. Soc. Philom. Paris, ser. 7, vol. 4, 1880, p. 220. Type *Pristipoma leucurum* VALENCIENNES, monotypic.
Euelatichthys FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527. Type *Diagramma affine* GÜNTHER, orthotypic.
Spilotichthys FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528. Type *Holocentrus radjabau* LACÉPÈDE, orthotypic.

Body compressed, oblong. Head strongly obtuse, upper profile well convex. Eye moderate. Mouth small, horizontal, upper jaw protractile. Maxillary slips below preorbital. Lips fleshy. Jaws with bands of villiform teeth, pointed, in about 4 to 6 rows. Chin with pores, without central groove or barbels. Preopercle serrate. Suborbitals without spines or serrae. No opercular spine. Branchiostegals 6 or 7. Pseudobranchiae large. Air bladder simple. Vertebrae 26 or 27, of which 15 or 16 caudal. Scales small or moderate, 50 to 125 in lateral series, ctenoid. Soft vertical fins scaly basally. Ventral base with scaly flap. Lateral line continuous. One dorsal, depressible in groove, with 9 to 14 stout spines, rays 15 to 23. Anal spines 3, rays 6 to 9. Pectoral pointed. Ventral inserted little behind pectoral base.

A large genus of striking Indo Pacific forms, many especially so as they are marked with black horizontal bands. The West African *Diagramella* Pellegrin is here excluded from this genus as its contour of the head is not elevated.

Diagramma amabile Kent[16] and *Diagramma amicium* Kent[17] are two names not possible to place. *Diagramma umbrinum* Klunzinger[18] is based on an identifiable young fish.

Depth 2½; head 2⅞. Snout 3⅓ in head; eye 3, little greater than snout; maxillary reaches ¼ in eye, leaving narrow infraorbital width about ½ of maxillary expansion, length 3 in head; interorbital little elevated. Scales all lost. Preopercle edge serrate. D. XIII, 18 (figure shows XII, 17), third spine 2⅛ in head, first ray 2⅗; A. III, 6 or 7 (figure shows 9 rays), second spine 2; caudal 1⅔, truncate; least depth of caudal peduncle 2½; pectoral 1⅓; ventral 1⅖. Brown, little paler below. Spinous dorsal pale brown, pectoral little darker, other fins pale rosy. Narrow brown line from snout tip to eye and arched a little to follow vertebral column back to caudal peduncle. Length 45 mm.

ANALYSIS OF SPECIES

a^1. PSEUDOPRISTIPOMA. Scales 50 to 60 in lateral line; spinous dorsal strongly notched along margin, fin XIII or XIV, 16 to 18; A. III, 7---------**nigrus.**

a^2. PLECTORHINCHUS. Scales 70 to 90 in lateral line.
  - b^1. Body with dark or black longitudinal bands, persistent with age.
    - c^1. Fins without dark spots or bands; ground color gray or brown.
      - d^1. Dark bands on body horizontal and parallel.
        - e^1. Eight uniformly golden longitudinal bands on head and body (several yellow longitudinal bands on dorsals in young, fading with age)--**faetela.**
        - e^2. Five to nine longitudinal bands on head and body, each with narrow bordering black line; fins yellow----------------**polytaenia.**
      - d^2. Curved dark band from nape to anal, another as parallel arc from third to seventh dorsal spines to upper caudal base, narrowing terminally and third paler short band along soft dorsal base--**cinctus.**
    - c^2. Fins with dark spots or blotches.
      - f^1. Body with 3 or 4 longitudinal dark bands.
        - g^1. Brownish olive, with 3 blue longitudinal bands on body; soft vertical fins dusky--------------------------------**albovittatus.**
        - g^2. Young with 3 large black blotches above joining along middle of side, with age breaking to form longitudinal dark band bifur-

---

[16] Great Barrier Reef, 1893, p. 369. Queensland.

[17] Idem, p. 369. Queensland.

[18] Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 736. Koseir, Red Sea; Fische Roth. Meer., 1884, p. 31, pl. 3, fig. 9.

cating to eye and caudal peduncle while above 2 parallel short bands and 1 below from cheek to caudal peduncle below; dark bar on caudal above and below with age..........**orientalis.**

*f*². Body with 6 to 9 black longitudinal bands.

*h*¹. Pectoral without large black medial blotch.

*i*¹. Black longitudinal bands not inclined with age on dorsal fin bases or breaking into spots below.

*j*¹. Six or 7 brown to black longitudinal bands, even, parallel; vertical fins dark marginally, also with large dark spots; dark bar across pectoral base..............................**diagrammus.**

*j*². Seven or 8 black longitudinal bands, with third to fifth with several connecting pale lines or bars; dorsal edges dusky and dark spots all along fins basally; caudal with dark oblique bars on each half; pectoral with dark basal spot........**radja.**

*i*². Nine black longitudinal bands, become oblique with age, while lower portions break as spots and upper bars slope upon dorsal basally; upper dorsal edge dark; all vertical fins with numerous round black spots..**goldmanni.**

*h*². Pectoral with large black blotch medially; 6 black longitudinal bands, upper broader than pale interspaces and uppermost on soft dorsal base; oblique black blotches or bands on each half of caudal..............................**lineatus.**

*b*². Body without dark or black longitudinal bands in adults, sometimes present in young, giving place to spots with age.

*k*¹. Head immaculate; young white, with 6 or 7 black longitudinal bands, with age forming irregular large blotches on back and vertical fins.........**gaterinus.**

*k*². Spots when present extend on head.

*l*¹. Lips moderately fleshy; paired fins never spotted.

*m*¹. Body uniform gray or with golden spots, often more or less connected spots and streaks on head, body and fins, body sometimes with lighter cross bars; fins more or less blackish...**schotaf.**

*m*². Body uniform gray; fins more or less blackish. **chubbi.**

*l*². Lips broad, fleshy; young brown with several large white round blotches, brown areas with dark spots, extend over entire upper body and vertical fins with age, not on throat or belly....**chaetodonoides.**

*a*³. SPILOTICHTHYS. Scales 122 to 125 in lateral line; body brown, young with 7 broad longitudinal black bands, breaking into spots over head, body, dorsal and anal with age; paired fins and anal immaculate.........**pictus.**

Subgenus PSEUDOPRISTIPOMA Sauvage

Scales 50 to 60 in lateral line. Spinous dorsal strongly notched along margin.

PLECTORHINCHUS NIGRUS (Cuvier)

Pristipoma nigrum (MERTENS) CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 258. Manila.—CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1056 (Sea of Pinang).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 289 (copied).

Diagramma nigrum Day, Proc. Zool. Soc. London, 1865, p. 14 (Cochin, Malabar); Fishes of Malabar, 1865, p. 23; Proc. Zool. Soc. London, 1870, p. 683 (Andamans).

Plectorhinchus nigrus Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 638 (Padang).

Diagramma leucurum Valenciennes, Hist. Nat. Poiss., vol. 9, 1833, p. 488. Seychelles.—Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 225 (Fort Dauphin, Madagascar).

Pseudopristipoma leucurum Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 161, pl. 32, fig. 1 (type; Madagascar).

Diagramma crassispinum Rüppell, Neue Wirbelth., Fische, 1835, p. 125, pl. 30, fig. 4. Djedda.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 319 (compiled).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Port Mackey, Queensland).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 738 (Red Sea).—Day, Fishes of India, pt. 1, 1875, p. 78, pl. 20, fig. 4.—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 437 (Seychelles).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (Queensland).—Klunzinger, Fische Roth. Meer., 1884, p. 31.—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 514.—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Tuticorin; Pamban).—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Singapore).—Lloyd, Rec. Indian Mus., vol. 1, 1907, p. 228 (Akyab).—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, 1908–1911, p. 154 (Durban, Natal).—Southwell, Ceylon Administr. Report, 1912–13, pp. E42, E44–49, E51.—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 279 (Kanglang; Saleyer).—Pearson, Ceylon Administr. Report, 1915–18, p. F14 (Trincomale).—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Plectorhynchus crassispina Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 15, pl. (64) 342, fig. 4 (Sumatra, Batu, Pinang, Singapore, Banka, Borneo, Java, Celebes, Ternate, Obi Major, Amboina, Goram, Waigiu, Luzon).—Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 132 (Makalla, Sokotra).

Plectorhynchus crassispinus Evermann and Seale, Proc. U. S. Nat. Mus., vol. 31, 1906, p. 508 (Manila).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 673 (Natal; Zululand).

Plectorhinchus crassispinus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 205 (compiled).

Euelatichthys crassispinus Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 268 (Apia); vol. 26, 1906 (1907), p. 22 (Cavite).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1908, p. 244 (Zamboanga).—Seale, Philippine Journ. Sci., vol. 5, No. 4, Oct. 1910, p. 276 (Sandakan).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, November 5, 1917, 452 (Colombo).

Diagramma gibbosus Hombron and Jacquinot, Voy. Astrolabe et Zelée, Zool., vol. 3, 1853, p. 46, pl. 5, fig. 2. Samoa.—Günther, Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 26 (Samoa).

Diagramma affine Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 319. North West Australia, Moluccas, Amboina, Madras, China.—Playfair, Fishes of Zanzibar, 1866, p. 26 (Zanzibar).—Schmeltz, Cat. Mus. Godeffroy, No. 6, 1866, p. 7 (Samoa).—Günther, Cruise of Curaçoa, Brenchley, 1873, p. 410 (Misol, Moluccas).—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Singapore).—Klunzinger, Sitz. Ber. Akad. Wiss. Wien, vol. 70, pt. 1, 1879, p. 351

(Queensland).—SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (Samoa).—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 202 (Lower Burdekin River).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Manado, Celebes).—GORGOZA, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Manila Bay).—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 168 (Amboina).—DUNCKER, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Changi, North East Singapore).

Plectorhinchus affinis FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527 (Padang).

Diagramma alta DAY, Proc. Zool. Soc. London, 1869, p. 514. No locality; Akyab.

Diagramma crassilabre ALLEYNE and MACLEAY, Proc. Linn. Soc. New South Wales, vol. 1, 1877, p. 271, pl. 5, fig. 5. Hall Sound, New Guinea.—KENT, Great Barrier Reef, 1893, p. 369 (Queensland).

Diagramma unicolor MACLEAY, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 261. China Straits, New Guinea.

Depth 2⅛ to 2⅗; head 2¾ to 2⅘, width 1⅞ to 2¼. Snout 2⅕ to 3⅛ in head; eye 3⅗ to 5¾, 1⅛ to 2½ in snout, greater than interorbital in young to 1½ with age; maxillary reaches to eye in young, or little beyond front eye edge with age, expansion 1⅕ to 2 in eye, length 3 to 3⅓ in head; small slit each side of snout front; lips large, thick, fleshy, very conspicuous and posteriorly extend well beyond maxillary or about ⅖ of eye; narrow band of rather small fine teeth in each jaw; palate and tongue toothless; interorbital 4⅛ to 4½, convex; preopercle edge with 25 small denticles. Gill rakers 9+20, which ⅖ of gill filaments, latter ⅔ of eye.

Scales 50 to 55 in lateral line to caudal base and 3 to 9 more on latter; tubular scales 49 or 50 in lateral line and 4 more on latter: 10 scales above lateral line, 16 below, 37 predorsal forward above nostrils, 16 rows on cheek. Suprascapula denticulate. Scales with 5 to 9 basal radiating striae; apical denticles 37 to 51, slender points, with 3 to 7 transverse series of basal elements; circuli very fine.

D. XIII or XIV, 16, I, to 18, I, fourth spine 1½ to 2¾ in total head length, ninth ray 1⅘ to 2⅛; A. III, 7, I, second spine 1⅗ to 2⅘, fourth ray 1⅔ to 2; caudal 1¼ to 1⅗, truncate, rounded as expanded; least depth of caudal peduncle 2⅘ to 3⅛; pectoral 1⅖ to 1¾; ventral 1¼ to 1½.

Largely uniform brown, but little paler on lower sides. Vertical fins and ventrals all more or less with dusky. Pectoral pale. Iris light yellowish in young.

Red Sea, Arabia, Zanzibar, Zululand, Natal, Madagascar, Seychelles, India, Ceylon, Andamans, Pinang, Singapore, East Indies, Philippines, North West Australia, Queensland, Polynesia. A uniformly dark-colored species, easily known by its dorsals deeply divided, caudal little emarginate, very broad fleshy lips and usually deep body, which often less deep in old examples. These may be confused with *Plectorhinchus pictus* in their general appearance, but may be distinguished by the greatly more fleshy lips and the absence of spots on the fins. Old examples of *Plectorhinchus nigrus* show the whole body more or less obscurely mottled, often each scale may have a slightly darker ill-defined spot or a pale or grayish spot. The fins in every case are more or less dusky and though clouded never spotted. The elongated body with advanced age is a confusing feature of the two species, though in *Plectorhinchus nigrus* the dorsals are with a distinct emargination separating the two fins.

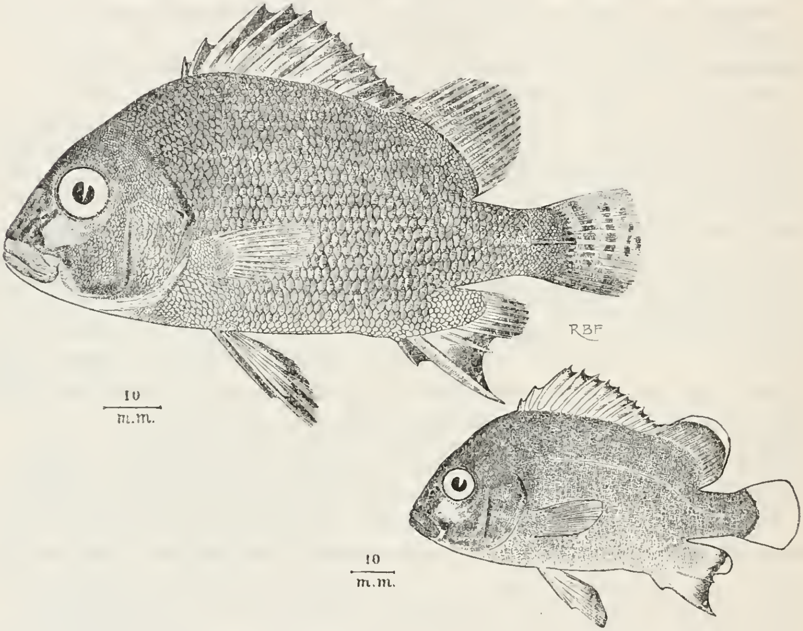

Figure 17.—Plectorhinchus nigrus (Cuvier). Young examples

The earliest available name is *Pristipoma nigrum* Cuvier, based on a drawing; D. XIV, 16; A. III, 7. Scales very small. Entirely blackish. Iris yellowish.

9062 to 9066, 22101 to 22104. Abuyog. July 26, 1909. Length 115 to 260 mm.
8713. Batam Island. June 5, 1909. Length 421 mm.
8727. Caracaran. June 28, 1909. Length 452 mm.
5867. Malabang River, Mindanao. May 21, 1908. Length 233 mm.
6724. Manila market. December 4, 1908. Length 198 mm.
13949. Paluan Bay, Mindoro Strait. December 11, 1908. Length 129 mm.
7186. Port San Vicente. November 18, 1908. Length 375 mm.
9130. San Roque. July 29, 1909. Length 465 mm.
8318, 8319. Subig Bay. January 7, 1908. Length 111 to 135 mm.
7358. Tara. December 15, 1908. Length 345 mm.

19992, 19993. Sandakan, Borneo. March 2, 1908. Length 96 to 121 mm.

5111. Sandakan. March 4, 1908. Length 220 mm.

A1195. Doworra Island. December 2, 1909. Length 560 mm. Sides slaty with granite-like mottling of paler much smaller than in large specimen, more or less orange shade on throat and interopercle, front half of soft dorsal, lower half of lower caudal lobe and lower fins distinctly blackish; spinous dorsal olive; inside of mouth with scarlet.

20775, 20776. Powati Harbor, Makyan Island. November 28, 1909. Length 159 mm.

A1248, A1249. Ambon market. December 6, 1909. Length 280 to 321 mm.

6820, 6821. Hong Kong market. September 26, 1909. Length 196 to 235 mm.

A1538. Doc Can Island. January 7, 1910. Length 565 mm.

52378 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 109 to 274 mm. 3 examples. Young with caudal white terminally.

55603 U.S.N.M. Manila. Dr. E. A. Mearns. Length 54 mm.

25135 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 324 mm. Color in arrack nearly uniform dark sepia, lower surface slightly paler. Pale spot on each scale on side of body, forming longitudinal rows. Vertical fins inclining to clove brown and blackish. Paired fins dilute brown. Peritoneum silvery. As *Plectorhinchus affinis*.

Subgenus PLECTORHINCHUS Lacépède

Scales 70 to 90 in lateral line.

PLECTORINCHUS FAETELA (Forskål)

Sciaena gaterina faetela FORSKÅL, Descript. Animal., 1775, p. 12. Arabia.

Diagramma faetela CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 305 (compiled).—RÜPPELL, Neue Wirbelth., Fische, 1835, pp. 125, 129 (copied).

Diagramma foetela GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 322 (compiled).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 737 (Koseir, Red Sea); Fische Roth. Meer., 1884, p. 30 (Koseir).—PELLEGRIN, Bull. Soc. Zool. France, vol. 39, 1914, p. 226 (Mahambo, Madagascar).

Plectorhynchus foetela BLEEKER, Nederland. Tijdschr. Dierk., vol. 4, 1872, p. (117) 150 (China).—STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 132 (Makalla, South Arabia).

Diagramma (Plectorhynchus) foetela ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Oman).

Diagramma flavomaculatum RÜPPELL, Atlas Reise Nördl. Afrika, Fische, 1828, p. 127. Tor, Red Sea.—(EHRENBERG) CUVIER, Hist. Nat. Poiss., vol. 3, 1830, p. 304 (Red Sea, Suez).—PETERS, Arch. Naturg., 1855, p. 242 (Mozambique).

Diagramma chrysotaenia BLEEKER, Nat. Tijds. Nederland. Indië, vol. 9, 1855, p. 303. Macassar, Celebes.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 333 (Amboyna).—MEYER, Anal. Soc. Espan. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Macassar).

Plectorhynchus chrysotaenia BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 16, pl. (51)329, fig. 1 (Singapore; Celebes).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 84 (Bulan).

Plectorhynchus celebicus BLEEKER, Nederl. Tijds. Dierk., vol. 4, 1873, p. 285. Macassar, Celebes; Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 18, pl. (51)329, fig. 3 (Celebes).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 84 (Jolo).

Diagramma celebicum Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 238 (New Guinea).

Diagramma celebicus Weber, Siboga Exp., vol. 57, Fische, 1913, p. 279 (Buka or Cyrus Bay, Rotti).

Plectorhinchus celebicus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 205 (compiled).

Diagramma ornatum Kossmann and Räuber, Wiss. Ergebn. Reise Küstengeb. Roth. Meers, vol. 1, 1877, p. 10, pl. 1, fig. 3. Red Sea.

Plectorhynchus saidae Steindachner, Anz. Akad. Wiss. Wien, vol. 32, March 18, July 11, 1895, p. 181. Mauritius.

Depth 2⅗ to 2⅘; head 3 to 3¼, width 2 to 2⅓. Snout 2⅗ to 3⅛ in head; eye 3¼ to 4⅔, 1 to 2 in snout, greater than interorbital in young to 1 to 1⅓ in interorbital with age; maxillary nearly or quite reaches opposite front eye edge, expansion 1⅗ to 3 in eye, length 2¾ to 3¼ in head; lips moderately thick, fleshy; teeth fine, conic, in 5 to 7 irregular series with outermost little enlarged; interorbital 3¼ to 5, broadly convex; hind preopercle edge denticulated. Gill rakers 11 or 12+19 or 20, lanceolate, 2 to 2¼ in gill filaments, which 1¼ to 1⅖ in eye.

Scales 77 to 88 in lateral line to caudal base and 10 to 18 more on latter; tubular scales 53 to 58 in lateral line to caudal base and 7 to 10 more on latter; 12 to 16 scales above lateral line, 16 to 22 below, 37 to 57 predorsal forward to first third in snout, 18 to 24 in vertical series on cheek. Suprascapula entire. Scales with 4 to 6 basal radiating striae; apical denticles 63 to 66, small points, each with 12 to 15 transverse series of basal elements; circuli fine.

D. XIII, 18, I, to 20, I, fourth spine 2⅛ to 2⅞ in head, first ray 2⅕ to 3¾; A. III, 6, I or 7, I, third spine 1¾ to 3⅖, second ray 1¾ to 2⅛; caudal 1 to 1⅓, slightly emarginate behind, truncate expanded; least depth of caudal peduncle 2½ to 2⅘; pectoral 1⅖ to 1⅔; ventral 1⅓ to 1⅔.

Back and above dull olive gray generally, little paler below; 6 to 8 longitudinal or horizontal slightly paler bands, about 10 or more with age, each much narrower than broad resultant bands, also several as those from eye may be partially subdivided by another incomplete auxiliary, variously not reaching the tail or caudal peduncle. Iris dull rosy with dusky. Fins all uniformly dull brownish.

Red Sea, Arabia, Mozambique, Mauritius, Madagascar, Singapore, East Indies, Philippines, China. Some of my examples differ from Bleeker's figures as the latter do not show the longitudinal bands with darker narrow bordering bands. On the cheek, however, the young show but two horizontal gray bands. Some of my largest examples differ from Bleeker's figure of *Plectorhynchus celebicus* as there are 13 horizontal pale lines, his figure showing half as many.

8165. Alibijaban Island. March 6, 1909. Length 327 mm.

8085. Alimango Bay, Burias Island. March 5, 1909 Length 408 mm.

22532 [1675]. Atulayan Island, Luzon. June 17, 1909. Length 102 mm. Colors similar to adult except spots on back and side almost fused into stripes; interspaces on side of head slaty blue; incised portion of dorsal spinous membranes barred with hyaline orange, that is, at tip; a row of spots in base and another through center of membranes continuing as bars across soft dorsal; marginal bar of spinous somewhat continuous with another bar through soft dorsal; anal and caudal without spots, olive yellow; paired fins similar.

6503. Balikias Bay. July 17, 1908. Length 398 mm.

7447. Bolalo Bay. December 21, 1908. Length 434 mm.

7815, 7839. Bugsuk Island. January 5, 1909. Length 258 to 305 mm.

8808. Butauanan, Luzon. June 13, 1909. Length 195 mm. Gray above becoming silvery or white below, margin of scales above palest. Back and upper side with numerous small orange spots about size of BB shot above, becoming smaller below lateral line and upon back in oblique rows upon scale rows. Same on top of head behind and below eye, fuse into horizontal stripes, 6 on cheek under eye, 2 lower obscure. Dorsal body gray, darker terminally and posteriorly, margin with orange spines and 2 prominent rows of spots, one at base and one in middle of membranes, in size about half eye diameter and irregular anteriorly. Soft dorsal with 2 rows anteriorly, irregular on posterior membranes. Caudal black terminally, spots irregular all over fin. Anal dark terminally, with darker of orange wash on rays, but no spots. Pectoral dusky orange, almost spotted at base, a scarlet bar on outside of fleshy base, scarlet in axil. Ventral like anal. Branchiostegal membranes scarlet in front of pectoral. Inside of mouth and its membranes scarlet. Orange about eyes.

7788. Candaraman. January 4, 1909. Length 387 mm.

8287. Canmahala Bay. March 11, 1909. Length 350 mm.

5750. Capunuypugan Point, Generale Island. May 10, 1908. Length 398 mm.

10609, 19860, 20275, 22659 [577]. Cataingan Bay, Masbate Island. April 18, 1908. Length 74 to 77 mm. Body and head bright yellow-green, white on underside of head and chest, pale yellow on belly; 8 longitudinal lines of cerulean blue, the lowest separated from belly by a narrow line of yellow green; dorsal and caudal bright yellow green like body; ventral cadmium orange; pectoral pale yellow-green; iris golden.

7731, 7732. Caxisigan Island. January 2, 1909. Length 344 to 385 mm.

6100. Iloilo market. March 31, 1908. Length 240 mm.

8837. Maculabo Island. June 14, 1909. Length 418 mm.

6174. Mansalay. June 4, 1908. Length 374 mm.

8582 to 8584. Matnog Bay. March 31, 1909. Length 248 to 344 mm.

15164, 15165. Pagapas Bay. February 20, 1909. Length 207 to 209 mm.

6547. Port Maricaban. July 21, 1908. Length 338 mm.

7007. Port San Pio Quinto, Camiguin Island. November 10, 1908. Length 505 mm.

8972. Rapurapu Island and Strait. June 22, 1909. Length 380 mm.

7341. Tara Island. December 14, 1908. Length 438 mm.

7353, 7354. Tara Island. December 15, 1908. Length 400 to 418 mm.

4955. Tataan, Tawi Tawi Group. February 21, 1908. Length 355 mm.

6462. Tilig. July 15, 1928. Length 340 mm.

6655. Varadero Bay. July 23, 1908. Length 338 mm.

5043. Sandakan, Borneo. February 29, 1908. Length 284 mm.

A960. Sadaa Island, Celebes. November 17, 1909. Length 350 mm.

56019 U.S.N.M. Jolo. Bureau of Fisheries (4064). Length 270 mm. Most of broad dark longitudinal bands subdivided, at least on head, by median narrow pale line.

PLECTORHINCHUS POLYTAENIA (Bleeker)

Diagramma polytaenia Bleeker, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. (740) 755. Macassar.

Diagramma polytaenia Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 332 (Port Essington).

Plectorhynchus polytaenia Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (17) 295, fig. 3; vol. 8, 1876–1877, p. 23 (Celebes, Solor, Ternate, Batjan, Amboina).

Plectorhinchus palytaenia Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62. 1922, p. 33 (Zamboanga). (Misprint.)

Plectorhinchus polytaenia Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 207 (compiled).

Diagramma polytaenioides Bleeker, Nat. Tijds. Nederland. Indië, vol. 6, 1854, p. 377. Lawajong, Solor Island.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 333 (Amboina); Cruise of Curaçoa, Brenchley, 1873, p. 410 (Misol, Moluccas).

Plectorhynchus polytaenioides Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (15) 293, fig. 2.

Diagramma ouan Thiollière, Fauna Woodlark, 1857, p. 157. Woodlark Island.

Depth 2⅘ to 2⅞; head 3⅛ to 3⅖, width 1⅞ to 2⅕. Snout 2⅓ to 2¾ in head; eye 3½ to 4, 1⅖ to 1⅗ in snout, little greater to 1⅒ in interorbital; maxillary ¼ in eye, length 2⅞ to 3 in head; teeth fine, in bands in jaws; interorbital 3½ to 3⅞, convex; hind preopercle edge finely serrate. Gill rakers 8 to 10+18 to 21, lanceolate, 1⅔ in gill filaments, which 1⅔ in eye.

Scales 102 to 105 counted close along above lateral line to caudal base; 50 or 60 tubular scales in lateral line to caudal base and 9 more on latter; 16 or 17 scales above lateral line to soft dorsal origin, 20 or 21 below, 50 to 57 predorsal scales forward slightly before front nostril. Scales with 5 or 6 basal radiating striae; apical denticles 50 or 51, small, slender points, basal elements in 13 or 14 transverse series; circuli very fine.

D. XII or XIII, 21, I, third spine 2⅓ to 2½ in head, second ray 3 to 3⅖; A. III, 7, I, second spine 2⅛ to 2⅕, third ray 1⅔ to 2; caudal 1¼, truncate or very slightly emarginate; least depth of caudal peduncle 2⅘ to 3; pectoral 1⅕ to 1¼; ventral 1⅕ to 1⅓.

Brown with 9 gray or whitish longitudinal bands, widest along middle of side. Between white lines each brown band narrowly edged or bordered with darker. Fins uniform dull brown. Iris yellowish.

East Indies, Philippines, Queensland, Melanesia. With its immaculate fins and dark brown longitudinal bands on the body, each with a dark bordering line, this species is unique in its coloring.

4826. Jolo market. February 10, 1908. Length 248 mm.

A547. Sulade Island, Jolo. September 17, 1909. Length 338 mm.

5991. Zamboanga market. May 26, 1908. Length 324 mm.

9396. Zamboanga market. September 7, 1909. Length 429 mm. Stripes of dark yellow, interspaces gray with dusky limiting lines; breast and belly dusky, without stripes; fins bright yellow; mouth more or less scarlet internally and on outer membranes.

84243 U.S.N.M. Zamboanga. Dr. F. Baker. Length 295 to 301 mm. 2 examples.

PLECTORHINCHUS CINCTUS (Schlegel)

Diagramma cinctum Schlegel, Fauna Japonica, Poiss., pts. 2–4, 1843, p. 61, pl. 26, fig. 1. Japan.—Richardson, Ichth. China, Japan, 1846, p. 229 (Coast of China and Japan).—Bleeker, Verh. Batav. Genootsch. (Japan), vol. 26, 1857, p. 5 (Nagasaki).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 325 (China Japan, Nepal?).—Day, Fishes of India, pt. 1, 1875, p. 81, pl. 21, fig. 1 (remarks on Günther's Nepal specimen likely from Ganges mouth).—Martens, Preuss. Exp. Ost Asien, 1876, p. 387 (Yokohama).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Yokohama, Japan).—Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 48, 1883, p. 11 (Tokyo).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 517.—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 54.—Pellegrin, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).—Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 46 (Yokohama).—Pearson, Ceylon Administrat. Rep., 1912–1913, p. E14 (Gulf of Manaar).—Tirant, Service Océanogr. Pèches Indo Chine, 6ᵉ Note, 1929, p. 168 (Cochin China).

Plectorhynchus cinctus Bleeker, Verh. Kon. Akad. Wet. Amsterdam, vol. 18, 1879, p. 7 (Nagasaki, Kaiusiu, Simoda, Sekok).—Steindachner, Ann. Naturhist. Hofmus. Wien, vol. 11, 1896, heft 2, p. 199 (Kobe, Hiogo, Nagasaki).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 549 (Yokohama, Wakanoura, Misaki).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 149 (Tokyo).

Diagramma (*Plectorhynchus*) *cinctum* Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Mekran).

?*Diagramma macrolepidotum* (Peters) Martens, Preuss. Exped. Ost Asien, 1876, p. 386. Yeddo. (No description.)

Depth 2⅖ to 2½; head 3, width 1⅞ to 2. Snout 2½ to 2⅞ in head; eye 3 to 4⅘, 1⅕ to 1⅞ in snout, greater than interorbital in young to 1⅖ in interorbital with age; maxillary not or to eye; length 3 in head; teeth minute, in narrow bands in jaws; interorbital 3½ to 4, convex; preopercle edge finely serrate. Gill rakers 7+15, lanceolate, 1½ in gill filaments.

Scales 90 to 95 along above lateral line, 65 to 70 along below; 17 scales above lateral line, 23 below, 50 predorsal forward opposite front nostril. Scales with 8 or 9 basal radiating striae; apical denticles 45 to 47, small, with 8 or 9 transverse series of basal elements; circuli fine.

D. XII, 15, fourth spine 1½ to 1⅗ in head, fifth ray 1¾ to 2; A. III, 7, second spine 1⅘ to 1⅞; caudal 1¼ to 1⅓, rounded in young, truncate with age; least depth of caudal peduncle 2⅗ to 2⅘; pectoral 1⅓ to 1½; ventral 1½ to 1⅖.

Brown, paler below. Arched dusky band from head above till about opposite anal. From third to seventh dorsal spines second dusky band bends in parallel arch to upper part of caudal base. Along soft dorsal base third short paler band, though darker than body color. Between uppermost dark band and second numerous dark spots. Ventrals usually with dark tips.

Ceylon, India?, Tonkin, China, Japan. A handsome species, with quite distinctive color pattern.

49464 U.S.N.M. Tokyo, Japan. *Albatross* Collection. Length 125 to 128 mm. 2 examples.

49469 U.S.N.M. Yokohama. *Albatross* Collection. Length 105 mm.

49474 U.S.N.M. Tokyo. *Albatross* Collection. Length 147 mm.

57522 U.S.N.M. Japan. P. L. Jouy. Length 175 mm.

75489 U.S.N.M. Wakanoura. Jordan and Snyder. Length 288 to 292 mm. 2 examples.

PLECTORHINCHUS ALBOVITTATUS (Rüppell)

Diagramma albovittatum Rüppell, Neue Wirbelth., Fische, 1835, p. 125, pl. 31, fig. 2. Massaua.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 330 (copied).—Playfair, Fishes of Zanzibar, 1866, p. 8.—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 736 (Kosier, Red Sea).—Martens, Preuss. Exped. Ost Asien, 1876, p. 387 (Ternate).—Klunzinger, Fische Roth. Meer., 1884, p. 31.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Macassar, South Celebes; Cebu).

Plectorhynchus albovittatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1867–1877, p. 16, pl. (51)329, fig. 2 (Celebes).

Plectorhinchus albovittatus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 205 (Marshall Islands).

Depth 2½ to 2⅔; head 2⅞ to 3, width 2⅕ to 3⅞. Snout 2¾ to 2⅘, 1⅓ to 2⅖ from snout tip; eye 3¾ to 3⅘, 1⅓ to 1⅖ in snout, little greater than interorbital in young to equal to interorbital with age; maxillary reaches eye, expansion 1⅞ to 2 in eye, length 3⅛ to 3¼ in head; teeth conic, simple, uniform, in 5 irregular series with outer row enlarged; interorbital 4 to 4⅓, broadly convex; preopercle edge with 35 to 42 short, weak denticles. Gill rakers 8+19 to 21, lanceolate, ½ of gill filaments, which 1⅗ in eye.

Scales 76 to 87 in lateral line to caudal base and 11 or 12 more on latter; tubular scales 56 or 57 in lateral line to caudal base and 8 to 10 more on latter; 11 to 13 scales above lateral line, 18 or 19 below, 41 to 46 predorsal scales forward opposite front nostril, 20 to 23 rows on cheek. Scales with 5 basal radiating striae and 1 to 3 incomplete auxiliaries; apical denticles 43 to 48, slender points, with 5 to 7 transverse series of basal elements; circuli very fine.

D. XIII, 19, i, third spine 2⅓ to 2⅔ in total head length, eleventh ray 1⅔ to 1⅞; A. III, 7, i, second spine 1⅞ to 2⅛, second ray

1⅗ to 1⅘; caudal 1⅙ to 1¼, very slightly concave behind, as expanded nearly truncate; least depth of caudal peduncle 2½ to 2⅗; pectoral 1½ to 1⅗; ventral 1⅓ to 1⅖.

Brown generally, paler below or on under surface of head and abdomen. Narrow whitish band begins on middle of interorbital, forks at occiput and extends along each side of spinous dorsal base to soft dorsal origin. A second narrow whitish band begins each side of snout tip, extends over nostrils and eye, across supraoccipital and then gradually wider to last dorsal ray bases, including upper caudal peduncle edge and obliquely over caudal to hind median caudal edge. Third less distinct, extends from below eye above pectoral fin origin nearly to bases of lowest caudal rays and then out over lower caudal rays to join upper band at hind caudal edge. Iris light yellowish. Spinous dorsal pale brown, edge narrowly dusky. Soft dorsal blackish brown, with horizontal whitish bands and hind edges of last short rays whitish. Caudal largely blackish brown, except for oblique terminals of white bands from body; outer portion of upper lobe with blackish brown corner and oblique blackish brown bar; lower lobe with broad blackish brown corner. Anal largely blackish brown. Pectoral pale brown. Ventral dusky brown.

Red Sea, Zanzibar, East Indies, Micronesia. My two larger examples differ a little as they have only the two white upper longitudinal bands distinct, the whitish band on the soft dorsal and dark blotches on the caudal largely absent. They have, however, the ventrals and anal both neutral dusky.

21856 [1303]. Canmahala Bay. March 11, 1909. Length 156 mm.
9361. Cebu market. September 24, 1909. Length 223 mm.
10953, 10954. Cebu market. August 25, 1909. Length 175 to 200 mm.

PLECTORHINCHUS ORIENTALIS (Bloch)

Anthias orientalis Bloch, Naturg. Ausländ. Fische, vol. 7, 1793, p. 10, pl. 326, fig. 3. Japan.—Forster, Fauna Indica, 1795, p. 16.—Schneider, Syst. Ichth. Bloch, 1801, p. 306 (Japan).

Serranus orientalis Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 318 (Japan).

Diagramma orientale Cuvier, Hist. Nat. Poiss., vol. 5, 1831, p. 299, pl. 124 (no locality).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 326 (type of *Diagramma sibbaldi*); Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 28, pl. 22, figs. B–C (Samoa).—Day, Fishes of India, pt. 1, 1875, p. 80, pl. 20, fig. 6; Fauna Brit. India, Fishes, vol. 1, 1889, p. 516.

Plectorhynchus orientalis Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (28)306, fig. 3; vol. 8, 1876–1877, p. 22 (Sumatra, Bali, Timor, Ternate, Buru, Amboina).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907(1908), p. 259 (Calayan).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 122 (Ambon).

Plectorhinchus orientalis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 207 (compiled).

Lutjanus aurantius Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 193, 239. Japan.

Diagramma pica Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 297, pl. 124. Tahiti.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 326 (compiled).—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 437 (Mauritius).

Diagramma sibbaldi Bennett, Proc. Comm. Zool. Soc. London, vol. 2, 1832, p. 182. Ceylon.

Diagramma picoides Peters, Monatsb. Akad. Wiss. Berlin, 1866, p. 94. No locality.—Day, Fishes of India, pt. 1, 1875, p. 83 (copied); Fauna Brit. India, Fishes, vol. 1, 1889, p. 519.

Depth 2⅔ to 3⅛; head 3⅖ to 3¾. Snout 2⅗ to 2⅞ in head; eye 3⅓ to 3¾, 1⅛ to 1⅓ in snout; maxillary reaches opposite hind nostril or to eye, length 3⅓ to 3½ in head; interorbital moderately elevated. (Scales 100 along above lateral line, 85 along below lateral line, 13 above transversely, 13 below transversely—Day.)

D. XII or XIII, 17 to 21, third spine 1⅞ to 2¼ in head, first ray 2½ to 2⅔; A. III, 7, second spine 1⅞ to 2¼, first ray 2 to 2⅗; caudal 1⅕ to 1⅓, truncate to little convex behind; least depth of caudal peduncle 2⅓ to 2⅘; pectoral 1⅓ to 1½; ventral 1⅓ to 1⅖.

White generally. In young 3 large black blotches, first on head, second on back and spinous dorsal and third on soft dorsal and back. Caudal also largely black. Black bands all more or less variably connected by medium black longitudinal band. With age black lateral band bifurcates to eye and caudal peduncle, variably and on back 2 parallel black bands. On side below black band variably from cheek to pectoral base and lower surface of caudal peduncle. Pectoral largely black medially. Black bar across caudal above and another below. Also black bar across anal. Length 190 mm. (Günther.)

Mauritius, Ceylon, East Indies, Philippines, Japan?, Polynesia.

PLECTORHINCHUS DIAGRAMMUS (Linnaeus)

Perca diagramma Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 293. Habitat?; ed. 12, vol. 1, 1766, p. 487.—Bonnaterre, Tabl. Ichth., 1788, p. 133 (no locality).—Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 133.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 342 (on Linnaeus).

Plectorhynchus diagramma Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 267 (Apia; Pago Pago).

Plectorhinchus diagramma Fowler, Bull. Bishop Mus., No. 22, 1925, p. 9 (Guam); Mem. Bishop Mus., vol. 10, 1928, p. 206 (Guam; Apia).

Bodian cuvier Bennett, Fishes of Ceylon, 1828–1830, pl. 13. Ceylon.

Diagramma cuvieri Playfair, Fishes of Zanzibar, 1866, p. 28 (Zanzibar).—Day, Fishes of India, Suppl., 1888, p. 785; Fauna Brit. India, Fishes, vol. 1, 1889, p. 516.—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).

Plectorhynchus cuvieri Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 21 (Java, Sumatra, Batu, Amboina, Banda).

Plectorhinchus cuvier Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 206 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong).

Diagramma lessonii Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 313. Waigiu.—Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, Nov. 12, 1831, p. 199, pl. 24 (Offack Bay, Waigiu).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 329 (Amboina).—Schmeltz, Cat. Mus. Godeffroy, No. 3, 1866, p. 7 (Samoa).—Playfair, Fishes of Zanzibar, 1866, p. 28 (Zanzibar; Aden).—Günther, Cruise of Curaçoa, Brenchley, 1873, p. 409 (Solomon Islands); Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 28, pl. 23 (East Africa; East Indies; Samoa).—Schmeltz, Cat. Mus. Godeffroy, No. 5, 1874, p. 23 (Samoa); No. 7, 1879, p. 39 (Samoa).—Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 260 (Hood Bay, New Guinea).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Samoa).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Macassar; Kordo, Mysore).—Jatzow and Lenz, Abh. Senckenberg. Ges., vol. 21, 1899, p. 501 (Zanzibar).

Diagramma lessoni Martens, Preuss. Exp. Ost Asien, 1876, p. 387 (Amboina).

Plectorhynchus lessoni Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (39) 317, fig. 3; vol. 8, 1876–1877, p. 19 (Java, Ternate, Amboina, Waigiu).

Plectorhynchus lessoni Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (27) 305, fig. 3.

Diagramma sebae Bleeker, Verh. Batav. Genootsch. (Sciaen.), vol. 23, 1850, p. 24. Batavia; Banda, Neira.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 33 (copied).—Kner, Reise Novara, Fische, 1865, p. 54 (Java).—Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 226 (Diego Suarez, Madagascar).

Plectorhynchus sebae Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–76, pl. (27) 305, fig. 3.

Plectorhinchus sebae Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528 (Padang).

Diagramma vavad Thiollière, Fauna Woodlark, 1857, p. 158. Woodlark Island.

Depth 2⅗ to 3⅛; head 2⅞ to 3⅖, width 1⅔ to 3. Snout 2¼ to 3⅕ in head; eye 3⅕ to 4¾, greater than snout in young to 1 to 2 in snout with age, greater than interorbital in young to 1⅕ in interorbital with age; maxillary reaches eye or to pupil, expansion 1⅖ to 2¾ in eye, length 2½ to 3⅖ in head; lips broad, thick, fleshy, coriaceous, especially with age; teeth in jaws fine, conic, in bands of about 5 irregular series with outermost slightly enlarged; interorbital 3 to 4¼, broadly convex; hind preopercle edge with small, rough, obsolete denticles. Gill rakers 9 or 10+20 or 21, lanceolate, short, ½ to ⅗ in gill filaments, which 1⅓ to 1½ in eye.

Scales 84 to 97 in lateral line to caudal base and 14 or 15 more on latter; tubular scales 52 to 62 in lateral line to caudal base and 10 more on latter; 11 to 14 scales above lateral line, 18 to 20 below, 53 to 60 predorsal forward midway in snout length, 22 rows on cheek to preopercle corner. Suprascapula entire. Scales with 6 nearly parallel basal radiating striae; apical denticles 66, short points, with 9 transverse series of basal elements; circuli fine.

D. XII or XIII, 17, i to 20, i, third spine 2⅕ to 2⅗ in head, first ray 3⅓ to 4½; A. III, 7, i, second spine 2⅒ to 2¾, second ray

1⅞ to 2⅒; caudal 1⅕ to 1⅖, with slightly emarginated hind edge; least depth of caudal peduncle 2½ to 3⅕; pectoral 1⅓ to 1⅔; ventral 1⅓ to 1¾.

Light brown generally; 6 or 7 longitudinal or horizontal dusky or dark brown bands, much narrower than interspaces, though lower two less distinct than others. Iris reddish brown. Dorsals with blackish edge, broad on spinous fin; bases of dorsal spines alternately darker; following on soft dorsal from uppermost dark band row of large blackish spots. Caudal with hind edge narrowly blackish and 4 rows of black spots on fin. Soft anal with blackish edge at apex and several dark spots in 2 rows. Paired fins pale, with dark transverse bar across pectoral base and ventral base darker.

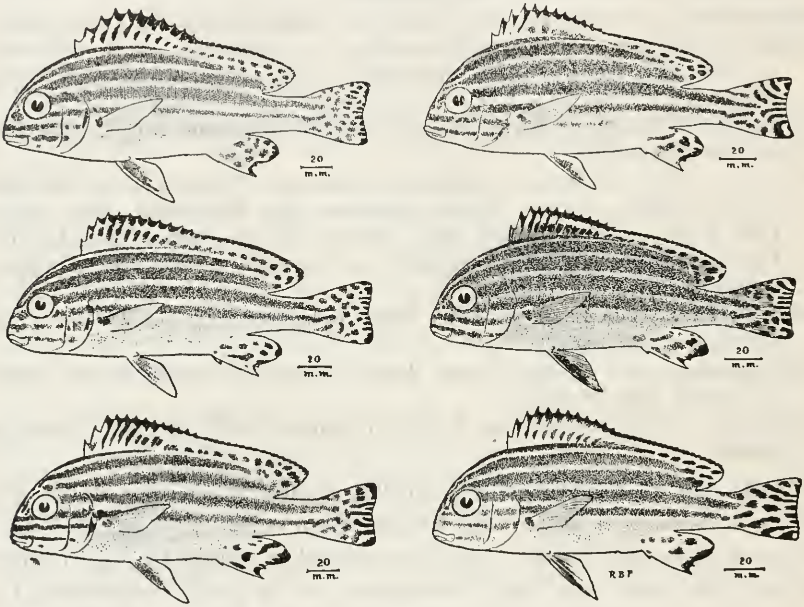
20 m.m.
20 m.m.
20 m.m.
20 m.m.
20 m.m.
RBF
20 m.m.

Figure 18.—Plectorhinchus diagrammus (Linnaeus). Variation of color markings

Arabia, Zanzibar, Madagascar, India, Ceylon, East Indies, Philippines, Melanesia, Micronesia, Polynesia. Bennett's figure of *Bodian cuvier* shows but few spots on the soft vertical fins.

My materials agree with Bleeker's figure of *Plectorhynchus sebae* though varies in having a few more spots usually on the soft dorsal and many more spots on the caudal. Also some examples have the second dark band below the eye well on the snout above the maxillary, thus differing from Bleeker, though well shown in Garrett's figure of *Diagramma lessonii* as published by Günther. The bands and spots are individually quite variable, often so on the two sides of the same fish. Variation is noticeable in the narrow pale longitudinal lines on the back often quite narrow, always less in width than those on the flanks medially. Also the tail often with black spots forming transverse blackish bands sometimes to the number of 4 or 5. Again in many examples the white longitudinal bands on the body may be broad, in others narrow. So that the intervening blackish ones vary from 5 to 8 with the lower one or two often variously absent. Sometimes the dark basal pectoral bar is present as in Bleeker's figure of *Plectorhynchus sebae*, again it may be but a small blackish spot at the origin of the fin. The caudal spots in most of my examples are far more numerous than Bleeker shows.

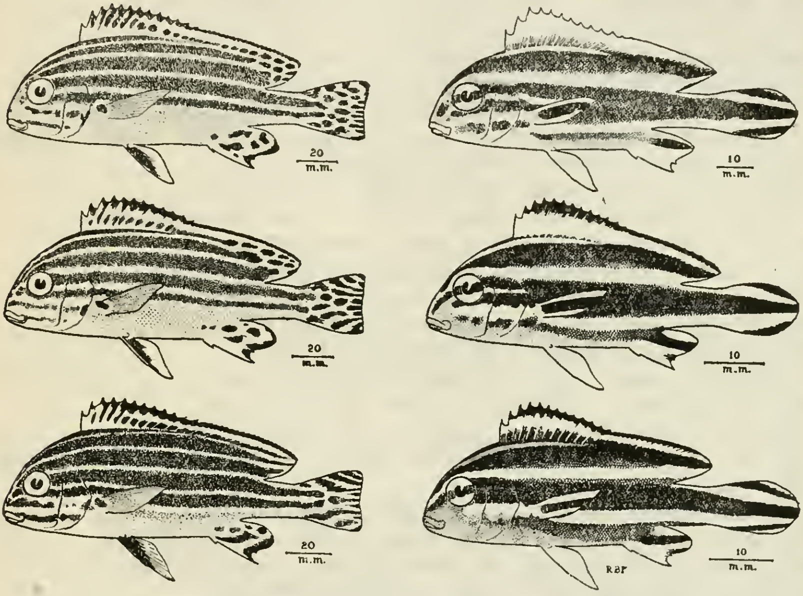

Figure 19.—Plectorhinchus diagrammus (Linnaeus). Variation of color markings

Lesson's figure of *Diagramma lessonii* is crude. It shows a rather broad median dark brown band from above the maxillary expansion, axial and back to caudal basally where very narrow and ending little below center of base. A second very narrow brown line extends from the maxillary expansion back above anal base nearly to lower edge of caudal peduncle. The 3 upper dark bands all begin at the maxillary, uppermost marginal along profile broadest, the other two interrupted by the eye. Spinous dorsal uniform brown. Soft dorsal with 3 or 4 transverse rows of irregular dark spots; same on caudal, but larger; anal with four rows of dark spots. Pectoral uniformly pale, red spot before origin. Ventrals dusky basally. Length 203 mm., reaches 305, though Cuvier gives 327.

6513, 8169. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 168 to 257 mm.

8086, 8088, 17767, 17768, 18272. Alimango Bay, Burias Island. March 5, 1909. Length 176 to 263 mm.

8932. Atulayan Island. June 18, 1909. Length 316 mm.

7733. Baganga Bay, Mindanao. May 13, 1908. Length 208 mm.

8358. Buang Bay, Talijit Island. March 15, 1909. Length 263 mm.

7820. Bugsuk Island. January 5, 1909. Length 243 mm.

18720. Butauanan Island, Luzon. June 13, 1909. Length 184 mm.

8286. Canmahala, Luzon. March 11, 1909. Length 255 mm.

8715. Capulaan Bay, Pagbilao. February 24, 1909. Length 181 mm.

8728, 8980. Caracaran. June 8, 1909. Length 218 to 293 mm.

21782 [1418]. Cebu market. March 20, 1909. Length 66 mm.

7649. Cotabato. May 20, 1908. Length 218 mm.

7542. Endeavor Strait, Palawan. December 23, 1908. Length 298 mm.

7600, 11621, 11622. Endeavor Strait. December 24, 1908. Length 210 to 263 mm.

7441. Guntao Island, Palawan Passage. December 20, 1908. Length 289 mm.

5185. Jolo market. March 7, 1908. Length 287 mm.

13348. Langao Point, Luzon. June 24, 1909. Length 198 mm.

8833, 8834. Maculabo Island. June 14, 1909. Length 278 to 298 mm.

36. Malapascua Island. March 16, 1909. Length 217 mm.

15968. Masbate Reef, Masbate. April 20, 1908. Length 166 mm.

7228. Masinloc Bay, Zambales. November 22, 1908. Length 240 mm.

4689. Nasugbu Bay. January 16, 1908. Length 162 mm.

7978. Pagapas Bay. February 20, 1909. Length 303 mm.

22. Pandanon Island. March 23, 1909. Length 234 mm.

8003. Port Banalacan. February 23, 1909. Length 285 mm.

14945. Port Ciego, Balabac. January 3, 1909. Length 188 mm.

7048. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 328 mm.

18973. Quinalasag Island. June 12, 1909. Length 190 mm.

8973. Rapurapu Island and Strait. June 22, 1909. Length 293 mm.

6916. Santo Domingo, Batan. November 7, 1908. Length 345 mm.

20937, 22892. Surigao. May 8, 1908. Length 64 to 66 mm.

5821. Tataidaga Point. May 15, 1908. Length 300 mm.

14308. Teomabal Island. September 18, 1909. Length 108 mm.

18959. Tilig. July 14, 1908. Length 183 mm.

6489. Tilig. July 15, 1908. Length 243 mm.

7650. Ulugan Bay, Oyster Inlet. December 28, 1908. Length 284 mm.

6632, 6656. Varadero Bay. July 23, 1908. Length 298 to 303 mm.

7184. West coast of Palaui Island. November 18, 1908. Length 260 mm.

6962, 6963. West coast af Sabtan Island. November 8, 1908. Length 318 to 343 mm.

A1487. Kait Point, Celebes, Dutch East Indies. December 28, 1909. Length 362 mm.

A1037, A1038, A1039. West of Malibagu Point, Celebes. November 21, 1909. Length 375 to 410 mm. Side stripes dark brown and silvery, or slightly grayish; first pale stripe under dorsal and anterior and posterior parts of second brassy yellow; all pale stripes across frontal contour also brassy yellow, roughly following curve from middle of maxillary through center of pupil; ground color of fins bright yellow, central region of spinous dorsal slightly pale; margins of verticals dark brown fading to reddish where merging into yellow, spots of similar color; terminal markings on anal with slight scarlet shades; paired fins not spotted, with scarlet axillary bar on ventral; all of pectoral axil scarlet, with $\frac{3}{4}$ bar across soft portion outside; dash of scarlet about exposed portion of gill opening and opercular membrane; some about maxillary membranes; upper lip buff yellow, lower with scarcely yellowish shades; orbit dashed with scarlet below, iris slightly above, otherwise yellow in extension of crossbar of forehead; dusky bars show more or less to level of base of ventral.

A1138. Kayoa Island. November 29, 1909. Length 288 mm.

52480 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 427 mm.

25137 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 378 mm. When fresh in arrack largely faded yellow. Nine blackish-brown longitudinal bands on sides and above much wider than pale interspaces, below much narrower. Edges of dorsal and caudal black and both fins like anal marked with large blackish-brown spots; on spinous dorsal form series along basal portion of fin; on soft dorsal series of about 10, which become median posteriorly; on anal arranged in several irregular series and about 10; soft anal tip black. On caudal number of black spots form 3 irregular series. Pectoral yellowish, uniform, with oblique blackish-brown basal cross bar; axil dusky. Ventral uniform yellowish, inside basally deep orange red. As *Plectorhinchus sebae.*

PLECTORHINCHUS RADJA (Bleeker)

Diagramma radja Bleeker, Nat. Tijds. Nederland. Indië, vol. 5, 1853, p. 336. Amboina.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 331 (copied).

Plectorhynchus radja Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (14) 292, fig. 1; vol. 8, 1876–1877, p. 20 (Celebes, Halmahera, Ternate, Bouro, Amboina, Goram).

Plectorhinchus radja Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 206 (copied).

Depth 3; head $3\frac{1}{3}$, width 2. Snout 3 in head; eye 4, $1\frac{1}{3}$ in snout, greater than interorbital; maxillary reaches $\frac{1}{3}$ in eye, expansion $1\frac{2}{3}$ in eye, length $3\frac{1}{10}$ in head; interorbital little convex; hind preopercle edge denticulate. Scales 100 along above lateral line, 80 along below lateral line; 13 or 14 scales transversely above lateral line, 38 below to ventrals. D. XII or XIII, 18 or 19 (figure shows XIV, 17), third spine $2\frac{1}{3}$ in head, first ray $2\frac{1}{6}$; A. III, 7 or 8, second spine $1\frac{3}{4}$, second ray $1\frac{4}{5}$; caudal $1\frac{2}{5}$, little convex behind; least depth of caudal peduncle $2\frac{4}{5}$; pectoral $1\frac{1}{3}$; ventral $1\frac{1}{5}$. Back yellowish, below whitish. Six to eight black longitudinal bands, fourth from eye waved and broken. Dorsals with black margin and single row of black blotches. Caudal with 4 or 5 oblique black bars on each lobe. Anal with 4 black horizontal bands. Black spot at pectoral base, paired fins otherwise immaculate. Length 190 mm. (Bleeker.)

East Indies.

PLECTORHINCHUS GOLDMANNI (Bleeker)

Diagramma goldmanni Bleeker, Nat. Tijds. Nederland. Indië, vol. 4, 1853, p. 602. Ternate.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 331 (copied).—Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 237

(New Guinea).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 280 (Makassar; Pepela Bay, Rotti).

Plectorhynchus goldmanni Bleeker, Atlas Ichth. Néerland., vol. 7, 1873–1876, pl. (17) 295, fig. 2; vol. 8, 1876–1877, p. 21 (Celebes, Ternate, Obi Major, Timor).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 84 (Jolo; San Fabian).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, p. 122 (Sauana, Sula Islands).

Plectorhinchus goldmanni Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 33 (Cebu).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 207 (compiled.)

Diagramma haematochir Bleeker, Nat. Tijds. Nederland. Indië, vol. 6, 1854, p. 175. Ternate.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 332 (copied).—Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 261 (Hood Bay, New Guinea).

Plectorhynchus haematochir Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (19) 297, fig. 2.—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 244 (Zamboanga).

Diagramma multivittata Macleay, Proc. Linn. Soc. New South Wales, vol. 2, 1878, p. 349, pl. 7, fig. 2. Port Darwin.—Kent, Great Barrier Reef, 1893, p. 369 (Queensland).

Plectorhynchus multivittatus Ogilby, Mem. Queensland Mus., vol. 3, 1915, p. 120 (types; Darnley Island).

Plectorhynchus paulayi Steindachner, Anz. Akad. Wiss. Wien, vol. 32, Nr. 28, July 11, 1895, p. 180. Mauritius.

Depth 2¾ to 2⅘; head 3⅕ to 3¼, width 1⅞ to 2¼. Snout 2⅓ to 2⅖ in head; eye 3¾ to 5, 1½ to 2⅞ in snout, 1 to 1½ in interorbital; maxillary reaches about opposite eye, expansion 1⅓ to 1¾ in eye, length 2⅞ to 3 in head; teeth villiform, in bands in jaws, of 5 or 6 irregular rows and several outer rows little enlarged; lips broad, thick, coriaceous; interorbital 3⅖ to 3⅘, broadly convex; hind preopercle edge minutely and obsoletely denticulate. Gill rakers 10+20, lanceolate, ½ of gill filaments which 1⅕ in eye.

Scales 86 to 93 in lateral line to caudal base and 10 to 12 more on latter; tubular scales 55 to 58 in lateral line to caudal base and 5 to 10 more on latter; 13 or 14 scales above lateral line, 20 or 21 below, 52 to 55 predorsal forward opposite nostrils, 22 to 26 rows across cheek. Suprascapula entire. Scales with 7 basal parallel marginal striae; apical denticles 60, short, with 6 transverse series of basal elements; circuli very fine.

D. XIII, 19, i, third spine 2½ to 3 in head, fourteenth ray 2 to 2½; A. III, 7, i, third spine 2⅘ to 3, second ray 1¾ to 2⅕; caudal 1⅕ to 1⅖, slightly emarginate behind; least depth of caudal peduncle 2¾ to 2⅞; pectoral 1⅓ to 1⅖; ventral 1⅓.

Light brown generally. Dark brown parallel bands, little wider than interspaces on head where less inclined, though more inclined below dorsal fins and extending up from lateral line. Below lateral line numerous irregular dark brown spots, also on opercle above and postocular region, though on body not extending below level of pectoral base. Lower side and surface of head and body, immaculate. Iris light brown. Spinous dorsal with blackish on most of membranes, or at least marginally. Soft dorsal with black border and 2 or 3 series of large blackish blotches. Caudal with narrow black border behind and 4 or 5 irregular rows of dark blotches or spots. Anal with margin or apex narrowly dusky and fin marked with several rows of large dark spots. Paired fins pale brown, immaculate.

Mauritius, East Indies, Queensland, North Australia, Philippines. A very handsome species, known by its more or less inclined black bands on the back, more complete and horizontal in the young but broken as bars and even as spots with age. The lower surface of the body from about level with the pectoral and middle of the caudal peduncle immaculate white.

My smaller examples more closely resemble Bleeker's figures. The dark lateral bands are more longitudinal or horizontal, number 8 in comparison with 19 of large examples, also not broken into spots on the axillary region. The spinous dorsal is pale, like the general body color, upper margin together with that of the soft dorsal black, also median line of black spots on spinous fin and 2 or 3 rows of black spots on soft dorsal. Caudal like that of large examples and bands all intact on the head, not broken into spots. Dark blotch present at pectoral origin. In still smaller examples the lower bands are more perfected. Variation in the large examples is quite noticeable, the dark bars sometimes variously interrupted and the axial lateral spots variously numerous. *Diagramma multivittata* Macleay is evidently a synonym, likewise *Plectorhynchus paulayi*. The latter is based on an example 300 mm. long and noted with: Depth 2⅔; head 3. Snout 2¼ in head; eye 3⅔; interorbital 4⅓. Scales 72, in lateral line 54 or 55, 11 above, 25 below. D. XIV, 17; A. III, 7. Coppery. Dark horizontal bands on head, largely broken as spots on cheek. Six dark lateral bands on body, inclined to dorsal bases, 4 anterior from head with uppermost to occiput.

8087, 19268. Alimango Bay, Burias Island. March 5, 1909. Length 226 to 417 mm.

8032. Capulaan Bay, Pagbilao. February 24, 1909. Length 249 mm.

A475. Isabela, Basilan Island. September 11, 1909. Length 225 mm.

4800. Jolo market. February 8, 1908. Length 300 mm.

7914. Limbones Cove, Luzon. February 8, 1909. Length 343 mm. Dorsal fin more yellow, wide area very narrow; pale areas of side less blue than shown and dark areas more coppery brown-red; at base of pectoral vermilion and fin not dark.

7229. Masinloc Bay, Zambales. November 22, 1908. Length 447 mm.

7938. Pagapas Bay. February 29, 1909. Length 263 mm.

7758, 7759. Port Ciego, North Balabac Strait. January 3, 1909. Length 247 to 488 mm.

6329. Port Jamelo. July 13, 1908. Length 415 mm.
6570. Port Maricaban. July 21, 1908. Length 488 mm.
6735. Port Matalvi. November 2, 1908. Length 189 mm.
7316, 7317. Sablayan Bay, Mindoro. December 12, 1908. Length 475 to 515 mm.
6867. Santo Domingo, Batan. November 7, 1908. Length 387 mm.
7359. Tara Island. December 15, 1908. Length 333 mm.
6431, 6445 to 6447. Tilig. July 14, 1908. Length 192 to 425 mm.
7649. Ulugan Bay, Oyster Inlet, Palawan. December 28, 1908. Length 275 mm.
A1159. Gane Road, Gillolo Island, Dutch East Indies. December 1, 1909. Length 460 mm. Diagonal bars very short; middle of side irregularly spotted; scarlet on base of pectoral large; interior of mouth including gill rakers and arches scarlet.
A1237. Gomomo Island. December 3, 1909. Length 380 mm.
13555. Tanakeke Island, Flores Sea. December 21, 1909. Length 177 mm.
A1335. Tomahu Island. December 11, 1909. Length 218 mm.
56044 U.S.N.M. Jolo. Bureau of Fisheries (3219). Length 203 mm.
58003 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 429 mm. As *Plectorhynchus haematochir.*
84201 U.S.N.M. Cebu. Dr. F. Baker. Length 218 mm.

PLECTORHINHUS LINEATUS (Linnaeus)

Perca lineata Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 293. Habitat?; ed. 12, vol. 1, 1766, p. 487.—Forskål, Descript. Animal., 1775, pp. xi, 42 (Djedda).—Bonnaterre, Table. Ichth., 1788, p. 127 (Red Sea), p. 134 (no locality).—Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 1319.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 229 (on Forskål), p. 347 (on Linnaeus).

Grammistes lineatus Schneider, Syst. Ichth. Bloch, 1801, p. 136 (locality?).

Diagramma lineatum Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 309 (no locality).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 330 (copied).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 735 (Koseir, Red Sea).—Day, Fishes of India, pt. 1, 1875, p. 78, pl. 20, fig. 5 (Cuddalore).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Cebu).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 515.—Weber, Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 263 (Ambon); Siboga Exp., vol. 57, Fische, 1913, p. 278 (Pidjot Bay, Lombok; Siau Island; Lauiui, Obi Major; Pepela Bay, Rotti).

Plectorhynchus lineatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (28) 306, fig. 4; vol. 8, 1876–1877, p. 19 (Celebes, Sangir, Timor, Halmahera, Ternate, Buru, Amboina, Saparua, Haruko, Goram, Banda).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 259 (Aparri).—Barnard, Ann. South Afric. Mus., vol. 27, pt. 1, Oct. 1927, p. 671 (Mozambique).

Plectorhinchus lineatus Fowler, Copeia, No. 58, June 18, 1918, p. 64 (Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 278 (Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 206 (Marshalls).

Perca arabica Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 131*r*. Arabia (On *Perca lineata* Forskål).—Schneider, Syst. Ichth. Bloch, 1801, p. 85 (Arabia).

Depth 2¾ to 2⅘; head 3⅕ to 3¼, width 2 to 2⅖. Snout 2¾ to 3 in head; eye 3¼ to 3½, 1⅛ to 1⅓ in snout, little greater than interorbital; maxillary reaches eye, expansion 2⅖ to 3 in eye, length 2⅞ to 3⅓ in head; teeth small, simple, conic, in 4 or 5 irregular series in jaws with outermost row little enlarged; interorbital 3⅖ to 4⅛, convexly elevated; preopercle edge with 25 to 30 denticles. Gill rakers 8+20, lanceolate, ⅓ to ½ of gill filaments which 1¾ in eye.

Scales 75 to 90 in lateral line to caudal base and 12 to 14 more on latter; 45 to 59 tubular scales in lateral line to caudal base and 9 to 11 more on latter; 12 or 13 scales above lateral line, 18 to 20 below, 38 to 47 predorsal forward above front nostril, 16 rows on cheek. Suprascapula denticulate. Scales with 6 to 9 basal radiating striae; apical denticles 25 to 30, with 6 transverse series of basal elements; circuli very fine.

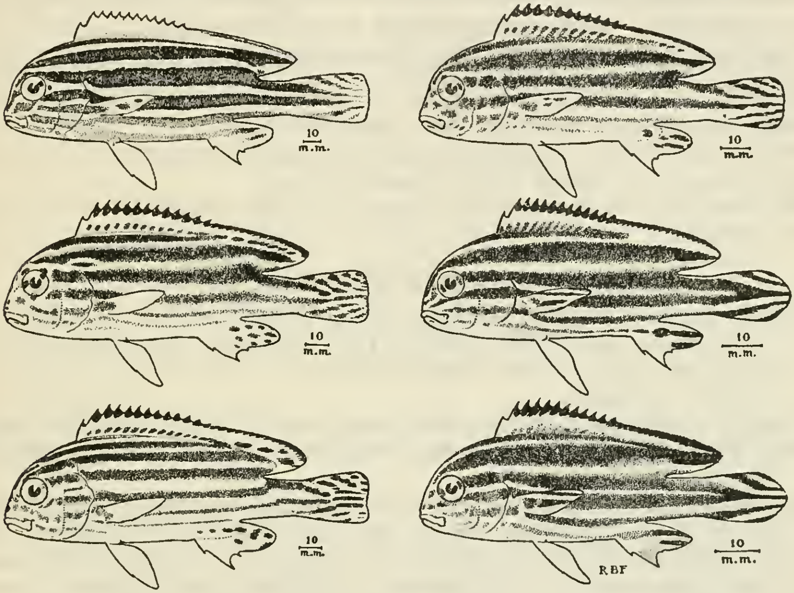
10 m.m.
10 m.m.
10 m.m.
10 m.m.
10 m.m.
10 m.m.
RBF

FIGURE 20.—PLECTORHINCHUS LINEATUS (LINNAEUS). VARIATION OF COLOR MARKINGS

D. XII, 22, I, third spine 2¼ to 2⅗ in total head length, nineteenth ray 1⅗ to 1⅘; A. III, 7, I, second spine 1⅘ to 1⅞, third ray 1⅗ to 1¾; caudal 1 to 1⅒, convexly rounded behind; least depth of caudal peduncle 2½ to 2¾; pectoral 1⅕ to 1¼; ventral 1¼ to 1⅓.

General color whitish, with 6 broad dusky brown longitudinal bands, all wider than pale interspaces, second, third and fourth widest. Iris yellowish white, except as crossed by dark band. Dorsals white, spinous fin broadly black marginally, also basally. On soft dorsal blackish margin becoming slightly submarginal posteriorly and ends in hind point of fin; dark basal band joins second broad lateral band and continues on fin horizontally to upper hind edge of fin. Third dark lateral band ends as blotch on last dorsal rays basally and continues out over caudal horizontally and above three oblique dark parallel bands which become horizontal as caudal is expanded; fourth dark horizontal band extends out over caudal similar to third and similarly three oblique dark parallel bands out on lower caudal lobes as on upper, only reversed. In young third and fourth dark bands only separated by a narrow whitish line on the head and body and merge in the caudal, whose lobes with only two black bands above and two below. Young also show pectoral with two black blotches and basal brown blotch. Ventral uniform pale yellowish. Anal with two dark horizontal bands.

Red Sea, Mozambique, India, East Indies, Philippines, Micronesia.

Two examples. Cebu market. March 20, 1909. Length 88 to 134 mm.
21824. Cebu market. March 22, 1909. Length 95 mm.
19053, 21742 to 21745. Cebu market. September 3, 1909. Length 94 to 157 mm.
5148. Jolo market. March 6, 1908. Length 189 mm.
4894. Siasi Island and market. February 17, 1908. Length 144 to 158 mm. 2 examples.

PLECTORHINCHUS GATERINUS (Forskål)

Sciaena gaterina Forskål, Descript. Animal., 1775, pp. xii, 50, Djedda.—Bonnaterre, Tabl. Ichth., 1788, p. 124 (Red Sea).—Gmelin, Syst. Nat. Linn., vol. 1, pt. 3, 1789, p. 1303.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 315, (on Forskål).

Holocentrus gaterina Schneider, Syst. Ichth. Bloch, 1801, p. 320 (Red Sea).

Holocentrus gaterinus Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 328, 348 (Arabia).

Diagramma gaterina Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 124, pl. 32, fig. 1 (Djedda).—Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 301 (Lohaja).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1858, p. 322 (Red Sea).—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 25.—Playfair, Fishes of Zanzibar, 1866, p. 27 (Zanzibar; Aden).—Martens, Verh. zool. bot. Ges. Wien, vol. 16, 1866, p. 378 (Koseir).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 737 (Koseir).—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 437 (Mauritius).—Klunzinger, Fische Roth. Meer., 1884, p. 30.—Schmeltz, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Zanzibar).—Boulenger, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—Jatzow and Lenz, Abh. Senckenberg. Ges., vol. 21, 1899, p. 501 (Zanzibar).

Diagramma gatherina Cuvier, Hist. Nat. Poiss., vol. 5, 1830, pl. 125.—Peters, Arch. Naturg., 1855, p. 242 (Mozambique).

Diagramma gatterina Schmeltz, Cat. Mus. Godeffroy, No. 6, 1877, p. 12 (Zanzibar); No. 7, 1879, p. 39 (Zanzibar).

Diagramma (*Plectorhynchus*) *gaterina* Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Oman).

Plectorhynchus gaterina Bamber, Journ. Linn. Soc. London, vol. 31, Zool., 1915, p. 481 (Sudanese Red Sea).

Sciaena abumgaterin Forskål, Descript. Animal., 1775, p. 51. Arabia.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 315 (on Forskål).

Depth 2⅖; head 3⅕. Snout 2⅓ in head; eye 3½, 1½ in snout, equals interorbital; maxillary reaches opposite hind nostril, length 3⅘ in head; interorbital little elevated. (Scales 70 to 80 in lateral line, 13 above, 20 below—Klunzinger.) D. XIII, 20 (figure shows but 12 spines), third spine 2⅖ in head, first ray 2⅓; A. III, 7 (figure shows 8 rays), second spine 1⅞; caudal 1⅓, slightly emarginate behind; least depth of caudal peduncle 2½; pectoral 1⅖; ventral 1¼. Yellowish gray, back greenish gray and belly yellowish. Head and tail with many rows of blackish gray blotches, in young these forming 5 longitudinal rows, with age spots irregular. All fins straw yellow, dorsal, anal and caudal spotted with black. Iris dark brown, with yellow ring around pupil. Length 431 mm. (Rüppell.)

Red Sea, Arabia, Zanzibar, Réunion, Mauritius, Mozambique. Resembles *Plectorhinchus pictus*, but the head and predorsal immaculate.

PLECTORHINCHUS SCHOTAF (Forskål)

Sciaena abu-mgaterin schotaf Forskål, Descript. Animal., 1775 p. 51. Arabia.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 315 (on Forskål).

Holocentrus schotaf Schneider, Syst. Ichth. Bloch, 1801, p. 320 (Red Sea).

Diagramma schotaf Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 126 (Red Sea); Neue Wirbelth., Fische, 1835, p. 125.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 322 (copied).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 738 (Koseir, Red Sea); Fische Roth. Meer., 1884, p. 31.

Diagramma schotaf Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 228 (on Forskål).

Plectorhinchus schotaf Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 207 (compiled).

Diagramma griseum Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 306. Malabar.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 321 (copied).—Day, Fishes of Malabar, 1865, p. 24 (copied).—Playfair, Fishes of Zanzibar, 1866, p. 26, pl. 4. fig. 3, var. *b* (Zanzibar, Aden, Kiswarra Bay); Proc. Zool. Soc. London, 1867, p. 850 (Seychelles).—Day, Fishes of India, pt. 1, 1875, p. 81, pl. 21, fig. 2 (type of *Diagramma sordidum*).—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 437 (Mauritius).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (Zanzibar).—Boulenger, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—Day, Fishes of India, Suppl., 1888, p. 785 (note).—Boulenger, Proc. Zool. Soc. London, 1889, p. 245 (Muscat).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 517, fig. 156.—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 167, pl. 24, fig. 4 (type; Bombay; Mascate; Batavia).—Southwell, Ceylon Administr. Report, 1912–13, p. E42 (Ceylon Pearl banks).—Pearson, Ceylon Administr. Rep., 1912–13, pt. 4, p. E14 (Gulf of Manaar); 1914, pt. 4, pp. E5, E23, (Gulf of Manaar).—Boulenger, Cat. Fresh Water Fish. Africa, vol. 3, 1915, p. 128, fig. 93 (Zanzibar; Seychelles).—Pearson, Ceylon Administr. Report, 1915–18, pp. F8–F11, F13–F16, F18.—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 355 (references).—Regan, Ann. Durban Mus., vol. 2, 1918, p. 199 (Durban).—Malpas, Ceylon Administr. Report, 1921, pp. E4–47.—Pearson, Ceylon Administr. Report, 1922, p. F6.—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Diagramma grisea Schmeltz, Cat. Mus. Godeffroy, No. 6, 1877, p. 12 (Zanzibar).

Plectorhynchus griseus Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1917, p. 132 (Makalla, Bal Haf, Tamarida, Sokotra).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 671 (Natal, Zululand, Delagoa Bay).

Diagramma (*Plectorhynchus*) *griseum* Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).

Diagramma kumut Thiollière, Fauna Woodlark, 1857, p. 158. Woodlark Island.

Diagramma reticulatum Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 334. China; Ann. Mag. Nat. Hist., ser. 4, vol. 12, 1873, p. 182 (Zanzibar).—Schmeltz, Cat. Mus. Godeffroy, No. 6, 1877, p. 13 (Zanzibar).

Plectorhynchus reticulatus McCulloch, Biol. Res. Endeavour, vol. 4, pt. 4, 1916, p. 185, pl. 53 (New South Wales and Little Island, West Australia).—Ogilby, Mem. Queensland Mus., vol. 6, 1918, p. 100 (Moreton Bay).

Plectorhinchus reticulatus Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 229 (Delagoa Bay).

Diagramma sordidum Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 735. Koseir, Red Sea; Fische Roth. Meer., 1884, p. 31, pl. 3, fig. 6.

Diagramma obscurum Günther, Proc. Zool. Soc. London, 1871, p. 657, pl. 58. Fiji.

Diagramma giganteum Günther, Ann. Mag. Nat. Hist., ser. 5, vol. 4, 1879, p. 136. Ponapé.—Schmeltz, Cat. Mus. Godeffroy, No. 8, 1881, p. 5 (Ponapé).

Diagramma jayakari Boulenger, Proc. Zool. Soc. London, 1887, p. 656. Muscat, East Arabia; 1889, p. 245 (Muscat).

Diagramma durbanense Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, 1908, p. 155. Natal.

Plectorhinchus durbanensis Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 228 (Delagoa Bay).

Diagramma griseum var. *playfairi* Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. (226) 233. Mahambo, Madagascar.

Plectorhinchus foetela (not Forskål) Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 229 (Delagoa Bay).

Depth 2½ to 2⅗; head 3⅒ to 3⅓, width 2 to 2⅛. Snout 2⅖ to 3 in head; eye 3⅓ to 4, 1⅛ to 1⅗ in snout, little greater than interorbital in young to 1⅛ with age; maxillary reaches opposite hind nostril, expansion 2 to 3⅛ in eye, length 3⅖ to 3⅘ in head; teeth small, simple, conic, in 4 irregular series in jaws, with outer row little enlarged; interorbital 3⅖ to 4⅓, broadly convex; preopercle edge with 20 small denticles. Gill rakers 11+17, lanceolate, 2⅔ in gill filaments, which 1¼ in eye.

Scales 75 to 90 in lateral line to caudal base and 10 to 16 more on latter; tubular scales 52 to 54 in lateral line to caudal base and 9 or 10 more on latter; 12 or 13 scales above lateral line, 17 to 19 below, 32 to 34 predorsal forward slightly before front nostril, 14 to 16 rows on cheek. Suprascapula entire, scaled. Scales with 7 or 8 basal radiating striae; apical denticles 24 to 33, with 4 or 5 transverse series of basal elements; circuli fine.

D. XII or XIII, 18, I or 19, I, fourth spine 2⅕ to 2¼ in total head length, twelfth ray 1⅘ to 2; A. III, 7, I, second spine 1⅔ to 1⅞, second ray 1¾ to 1⅘; caudal 1⅛ to 1¼, truncate, slightly convex behind as expanded, with age little emarginate; least depth of caudal peduncle 2⅖ to 2⅗; pectoral 1⅖ to 1½; ventral 1⅖ to 1⅓.

Back and upper surface ecru drab, lower sides and under surface of head and body whitish. Vertical fins ecru drab to light brown. Pectoral pale basally, neutral brown to dusky terminally. Iris pale yellowish.

Red Sea, Arabia, Zanzibar, Delagoa Bay, Zululand, Natal, Mauritius, Madagascar, Seychelles, India, Ceylon, East Indies, China, Queensland, Melanesia, Micronesia, Polynesia. Known chiefly by its uniform brownish coloration, reaching 915 mm.

21607, 13880. Matnog Bay. May 31, 1909. Length 90 to 119 mm.
8776. Quinalasag Island. June 12, 1909. Length 377 mm.
22895. Surigao. May 8, 1908. Length 77 mm. Brown with traces of 5 darker horizontal bands on head.
4340 [Sta. 5066]. Length 235 mm.

PLECTORHINCHUS CHUBBI (Regan)

Diagramma chubbi REGAN, Ann. Durban Mus., vol. 2, 1917, p. 199, fig. 2. Durban, Natal.

Plectorhynchus chubbi BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 673 (Natal).

Depth 2½ to 2⅔; head 3 to 3¼. Snout 3⅛ in head from snout tip; eye 3 to 3½, little longer than snout or interorbital width; maxillary barely reaches eye, expansion 2¾ in eye, length 3⅓ in head; interorbital but very slightly convex; hind preopercle edge serrate. Gill rakers 21 or 22 on lower part of first arch.

Scales 110 in longitudinal series; 60 to 67 tubular scales in lateral line, 15 to 17 above. Preorbital scaly posteriorly.

D. XI, 15 to 17, fourth spine 2⅕ in total head length, fourth ray 2; A. III, 7 or 8, second spine 2⅕, fifth ray 2; caudal 1⅓, truncate or slightly emarginate; least depth of caudal peduncle 2¾; pectoral 1½; ventral 1½.

Uniform grayish. Spinous dorsal edge, band on soft dorsal and ends of caudal, anal and ventrals more or less blackish. Length 150 mm. (Regan, Barnard.)

Natal coast. The type 123 mm. long in the British Museum.

PLECTORHINCHUS CHAETODONOIDES Lacépède

Plectorhinchus chaetodonoides LACÉPÈDE, Hist. Nat. Poiss., vol. 2, 1800, pl. 13, fig. 2; vol. 3, 1802, pp. 134, 135. No locality.—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 205 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong).

Plectorhynchus chaetodonoides BLEEKER, Atlas Ichth. Ind. Néerland. vol. 7, 1873–1876, pl. (23) 301, fig. 3, pl. (25) 303, fig. 2.—JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 267 (Apia).—BEAUFORT, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 121 (Ambon).

Plectorhynchus chaetodontoides Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 17 (Singapore, Java, Celebes, Ternate, Amboina, Haruko).

Plectorhinchus chaetodontoides Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 34 (Cebu).

Lutjanus chaetodonoides Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 195, 243. No locality (collection Muséum d'histoire naturelle).

Diagramma chaetodonoides Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 326 (copied).

Diagramma chaetodontoides Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Cebu).

Chaetodon plectorhinchus Shaw, General Zool., vol. 4, 1803, p. 356, pl. 49. No locality.

Diagramma plectorhynchus Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 294 (type).

Diagramma pardalis (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 300. Java.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 323 (no locality).—Martens, Preuss. Exp. Ost Asien, 1876 p. 386 (Singapore).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Manado, Celebes).—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Singapore).

Diagramma pardale Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).

Diagramma montrouzieri Thiollière, Fauna Woodlark, 1857, p. 156. Woodlark Island.

Diagramma punctatissimum Playfair, Proc. Zool. Soc. London, 1867, p. 851, pl. 40. Seychelles.—Günther, Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 27, pl. 21 (Society Islands).

Diagramma papuense Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 237. New Guinea.

Plectorhynchus doanei Seale, Philippine Journ. Sci., vol. 4, No. 6, Nov. 1909, p. 51. Sitanki Island, Jolo Archipelago; Cagayan, Mindanao.

Depth $2\frac{1}{4}$ to $2\frac{1}{2}$; head $2\frac{1}{2}$ to $3\frac{1}{5}$, width 2 to $2\frac{1}{10}$. Snout $2\frac{1}{8}$ to $2\frac{2}{3}$ in head from snout tip; eye $3\frac{1}{4}$ to $5\frac{1}{4}$, $1\frac{1}{5}$ to $2\frac{3}{5}$ in snout, greater than interorbital in young, 1 to $1\frac{1}{5}$ with age; maxillary not reaching front eye edge to $\frac{1}{3}$ in eye, expansion $1\frac{1}{5}$ to $2\frac{1}{4}$ in eye, length $2\frac{4}{5}$ to $3\frac{1}{3}$ in head from snout tip; teeth conic, simple, largely uniform in 4 irregular rows in jaws, outer row little enlarged; interorbital $3\frac{3}{4}$ to $4\frac{2}{5}$, broadly convex; preopercle edge with about 30 to 44 denticles. Gill rakers 10+26, lanceolate, $1\frac{1}{4}$ in gill filaments, which $1\frac{4}{5}$ in eye.

Scales 65 to 70 in lateral line to caudal base and 10 to 12 more on latter; tubular scales 52 to 59 in lateral line to caudal base and 9 or 10 more on latter; 14 or 15 scales above lateral line, 19 to 21 below, 48 to 50 predorsal forward midway in snout length; 23 rows on cheek. Suprascapula serrate. Scales with 6 basal radiating striae; apical denticles 31 to 57, slender, with 5 to 8 transverse series of basal elements; circuli fine.

D. XII, 18, i, or 19, i, fourth spine $1\frac{2}{5}$ to 4 in total head length, eighth ray $1\frac{1}{5}$ to $2\frac{3}{4}$; A. III, 8, i, second spine $1\frac{1}{2}$ to 3, third ray $1\frac{1}{3}$ to $2\frac{1}{4}$; caudal 1 to $1\frac{2}{3}$, convex behind in young to slightly emarginate with age and upper lobe longer; least depth of caudal peduncle 2⅔ to 3⅔; pectoral 1 to 1½; ventral 1⅕ to 1⅘.

Young brown generally on head and body, with large well defined round creamy blotch above eye and on predorsal; one on back at junction of dorsals; one including snout before eye; another includes lower cheek, opercle and chest, this often joining another below pectoral extending over breast to ventral base; one on flank just behind gill opening; one on ventral region from opposite ventral ends to anal fin; one over caudal peduncle. With age one or several dark spots appear in pale areas. Iris yellowish white. Spinous dorsal deep brown over basal ⅔. Soft dorsal variably dark brown as basal band or blotches, also variably with deep brown spots, otherwise white. Caudal with base brown, from broad band over caudal peduncle, this extending with median angular point into white of fin, which otherwise blotched with deep brown. Anal whitish, deep brown basally, otherwise whitish, terminally with dark spots. Paired fins neutral black, with white terminal leaving small black spots. Dark brown color of young breaks in rounded spots with age and others form in the pale areas, so adult becomes covered with large deep brown spots. These, however, largely absent from under surface of head and trunk with age, also pectoral fins, though paired fins largely deep neutral.

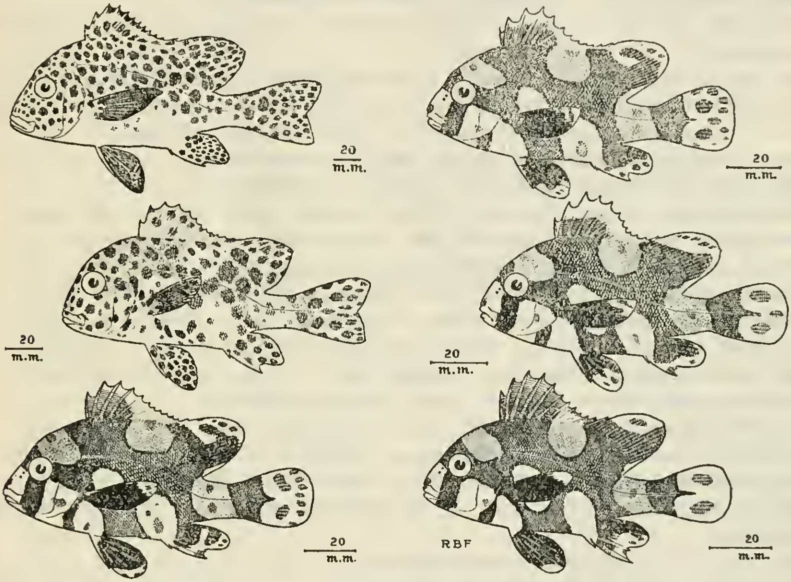
20 m.m.
20 m.m.
20 m.m.
20 m.m.
20 m.m.
RBF
20 m.m.

Figure 21.—Plectorhinchus chaetodonoides Lacépède. Variation of color markings

Singapore, East Indies, Philippines, Melanesia, Polynesia. A very handsome species, the young especially with striking color pattern. Quite likely *Plectorhynchus doanei*, based on an example but 40 mm. long, is the young. It is described as orange red, with 7 large white areas, margined black; front one on snout, second nuchal and on opercle, third from gill opening to ventrals, with square red band across thorax. Dark ocular band width of eye from eye down around base of mandible. Fourth white area round black spot behind and above pectoral bases; sixth just above and includes anal origin; seventh oblique white ring at outer 2/3 of caudal peduncle. Caudal with hind 2/3 white, with oblong dusky patch on each lobe.

8738. Agojo Point, Catanduanes Island. June 10, 1909. Length 448 mm.
21836. Atulayan Bay. January 17, 1909. Length 102 mm.
8634, 8635. Biri Channel, Balicuatro Islands. June 1, 1909. Length 242 to 253 mm.
8359. Buang Bay, Talajit Island. March 15, 1909. Length 380 mm.
8806, 8807. Butauanan Island, Luzon. June 13, 1909. Length 240 to 268 mm.
7794. Candaraman Island. January 4, 1909. Length 250 mm.
5529. Catbalogan, Samar. April 16, 1908. Length 198 mm.
7733. Caxisigan Island. January 2, 1909. Length 398 mm.
7535. Endeavor Strait, Palawan. December 23, 1908. Length 268 mm.
8235. Galvaney Island. March 9, 1909. Length 387 mm.
5184. Jolo Island. March 7, 1908. Length 460 mm.
8838. Maculabo Island. June 14, 1909. Length 462 mm.
14461 [1892]. Managua River, Cebu. August 25, 1909. Length 112 mm.
19, 17646. Pandanon Island. March 23, 1909. Length 127 to 170 mm.
5917, 5918. Parang, Mindanao. May 23, 1908. Length 325 to 459 mm.
11039. Port Maricaban. July 21, 1908. Length 223 mm.
7261. Port Matalvi. November 23, 1908. Length 323 mm.
15759. Sacol Island, east of Zamboanga. September 9, 1909. Length 113 mm.
17601. San Miguel Island, Tabaco Bay. June 4, 1909. Length 135 mm.
A470. Tulnalutan Island, east of Zamboanga. September 9, 1909. Length 485 mm.
6430. Tilig. July 14, 1908. Length 240 mm.
6490. Tilig. July 15, 1908. Length 223 mm.
7658. Ulugan Bay, Oyster Inlet, Palawan. December 28, 1908. Length 458 mm.
6626, 6627. Varadero Bay. July 23, 1908. Length 244 to 293 mm.
[455]. Talisse Island, north of Celebes, Dutch East Indies. November 9 1909. Length 98 mm.
7267 U.S.N.M. Java. Bryant and Palmer. Length 300 mm.
84212 U.S.N.M. Cebu. Dr. F. Baker. Length 114 mm. (not 150 as stated by Fowler and Bean).

Subgenus SPILOTICHTHYS Fowler

Scales 1122 to 126 in lateral line.

PLECTORHINCHUS PICTUS (Thunberg)

Perca picta THUNBERG, Kon. Vet. Akad. Nya Handl., vol. 13, 1792, p. 143. Japan.
Grammistes pictus SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 190 (Japan).
Lutjanus pictus LACÉPÈDE, Hist. Nat. Poiss., vol. 5, 1803, pp. 687, 688 (Japan).
Diagramma pictum CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 315 (Java, Pondicherry, Japan).—VALENCIENNES, Règne Animal Cuvier, Ill., Poiss., 1839, p. 86, pl. 30, fig. 3.—SCHLEGEL, Fauna Japonica, Poiss., pts. 2–4, 1843,

p. 62 (Japan).—RICHARDSON, Ichth. China Japan, 1846, p. 227 (Hong Kong).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 327 (China, Japan, Amboina, Madras, Java).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 28 (Zanzibar; Aden).—DAY, Fishes of India, pt. 1, 1875, p. 81, pl. 21, fig. 3.—MARTENS, Preuss. Exp. Ost Asien, 1876, p. 387 (Singapore; Amboina River).—KLUNZINGER, Fische Roth. Meer., 1884, p. 30.—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Cebu).—GORGOZA, Anal. Soc. Españ. Hist. Nat. Madrid, vol. 17, 1888, p. 284 (Samar).—DUNCKER, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Singapore).—PELLEGRIN, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).—REGAN, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 330 (Persian Gulf).—FRANZ, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 47 (Enoshima).—SOUTHWELL, Ceylon Administr. Report, 1912–13, p. E42 (Ceylon Pearl banks).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 279 (Macasser, Saleyer, Postillion Islands).—MALPAS, Ceylon Administr. Report, 1921, p. E5.—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Diagramma (*Plectorhynchus*) *pictum* ZUGMAYER. Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Oman).

Plectorhynchus pictus BLEEKER, Versl. Meded. Akad. Wet. Amsterdam, ser. 2, vol. 3, 1869, p. 238 (Jedo); Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 24, pl. (51) 329, fig. 4, pl. (55) 333, fig. 2 (Sumatra, Nias, Pinang, Singapore, Bintang, Banka, Java, Duizend Islands, Bawean, Celebes, Batjan, Ternate, Ceram, Amboina).—STEINDACHNER, Ann. Hofmus. Wien, vol. 11, 1896, p. 199 (Kobe, Higo, Nagasaki).—JORDAN and SNYDER, Annot. Zool. Japon, 1901, p. 718 (Nagasaki; Yokohoma).—EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 84 (Bulan; Jolo).—JORDAN and THOMPSON, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 546 (Manila, Cavite, Formosa, Onomichi, Nagasaki).—SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 415 (Kagoshima).—JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 255 (Sagami Bay; Misaki).—TANAKA, Fishes of Japan, vol. 22, 1916, p. 386. pl. 105, fig. 325 (Japan, north to Tokyo).—JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 238 (Wakanoura, Kobe).—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 670 (Natal, Delagoa Bay, Mozambique).

Plectorhyncus (*Diagramma*) *pictus* MCCULLOCH, Biol. Res. Endeavour, vol. 4, pt. 4, 1916, p. 184 (off Double Island Point, in 32 to 33 fathoms, Queensland).

Plectorhinchus pictus FOWLER, Copeia, No. 58, June 18, 1918, p. 64 (Philippines).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 35 (Takao; Cebu).—FOWLER, Proc. Acad. Sci. Philadelphia, 1927, p. 279 (Orion; Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 207 (Society Islands); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 638 (Padang).

Spilotichthys pictus JORDAN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 22 (Cavite).—SEALE, Philippine Journ. Sci., vol. 5, No. 4, Oct. 1910, p. 276 (Sandakan).

Perca pertusa THUNBERG, Kon. Vet. Akad. Nya Handl., vol. 14, 1793, p. 198, pl. 7. Japan.

Lutianus pertusus SCHNEIDER, Syst. Ichth. Bloch., 1801, p. 328 (Japan).

Diagramma pertusum GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 321 (copied).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 26, pl. 4, fig. 2 (Zanzibar).

Holocentrus radjaban LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, p. 335 (description in key).

Holocentrus radjabau Lacépède, Hist. Nat. Poiss., vol. 4, 1803, p. 372. East Indies.

Plectorhinchus radjabau Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528 (Padang).

Anthias diagramma (not *Perca diagramma* Linnaeus 1758) Bloch, Naturg. Ausländ. Fische, vol. 6, 1792, p. 117, pl. 320 (East Indies).—Forster, Fauna Indica, 1795, p. 16.—Shaw and Nodder, Natural. Miscellany, vol. 11, 1799, pl. 402 (India).

Grammistes diagramma Schneider, Syst. Ichth. Bloch, 1801, p. 184 (East Indies; Coromandel).

Sparus diagramma Shaw, General Zool., vol. 4, 1803, p. 440, pl. 65. Indian Seas.

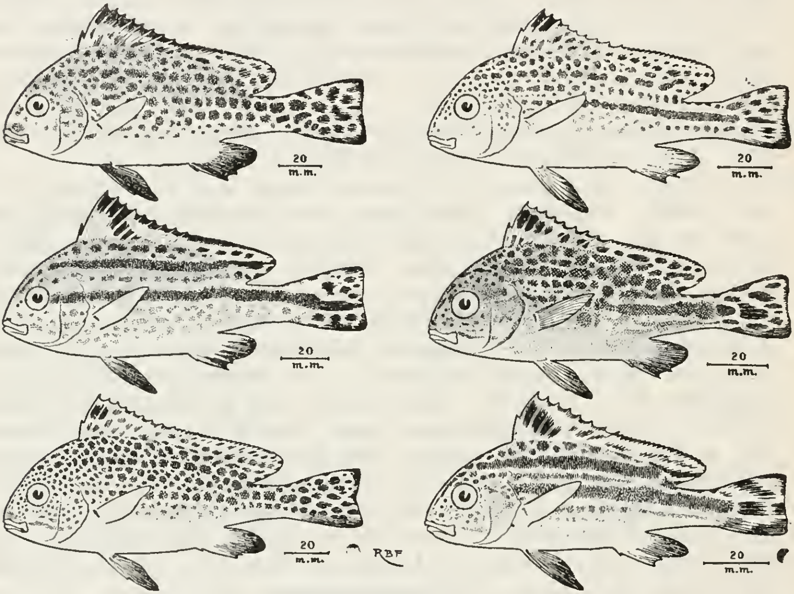

Figure 22.—Plectorhinchus pictus (Thunberg). Variation of color markings

Plectorhynchus diagramma Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 500 (Okinawa).

Plectorhinchus diagrammus Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 279 (Calapan).

Plectorhinchus diagramma Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 206 (part).

Diagramma lineatum Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 125. Massaua.

Diagramma punctatum (Ehrenberg) Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 126, pl. 32, fig. 2. Northern Red Sea.—Cuvier, Hist. Nat. Poiss., vol 5, 1830, p. 302 (Java, Batavia, Vanicolo).—Quoy and Gaimard, Voy. Astrolabe, Zool., vol. 3, 1834, p. 699, pl. 12, fig. 2 (Vanikoro).—Schlegel, Fauna Japon., Poiss., pts. 2–4, 1843, p. 60, pl. 26, fig. A (Japan).—Bleeker, Act. Soc. Sci. Ind. Néerland., No. 3, vol. 3, 1857–1858, p. 3 (Kioesio), p. 5 (Japan); No. 9, vol. 5, 1858–1859, p. 2 (Nagasaki).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 323 (Red Sea, Ceylon, China).—Kner, Reise Novara, Fische, 1865, p. 54 (Java).—Playfair, Fishes of Zanzibar, 1866, p. 27 (Zanzibar; Aden).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 734 (Koseir).—DAY, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—GÜNTHER, Cruise of Curaçoa, Brenchley, 1873, p. 410 (Misol, Moluccas).—DAY, Fishes of India, pt. 1, 1875, p. 83, pl. 21, f. 4.—KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 351 (Queensland).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (North Celebes).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—PELLEGRIN, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).—SOUTHWELL, Ceylon Administr. Report, 1912–13, p. E42 (Ceylon Pearl banks).—MALPAS, Ceylon Administr. Report, 1921, p. E8.—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Diagramma punctata SCHMELTZ, Cat. Mus. Godeffroy, No. 1, 1864, p. 8 (East Indies).

Plectorhynchus punctatus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (22) 300, fig. 1.

Plectorhinchus punctatus FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 34 (Cebu).

Diagramma cinerascens RÜPPELL, Atlas Reise Nördl. Afrika, Fische, 1828, p. 127. Red Sea.—CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 307 (Trincomale).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 735 (Koseir, Red Sea).

Diagramma thunbergii CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 308 (on THUNBERG).

Diagramma centurio CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 308. Seychelles.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 322 (copied).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 127.—SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 166, pl. 20, figs. 2–a (type).

Diagramma blochii VALENCIENNES, Hist. Nat. Poiss., vol. 5, 1830, p. 312. Trincomale.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 329 (no locality).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 28 (Zanzibar).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 154 (Ceylon).

Plectorhynchus blochii CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, No. 2, 1849, p. 1059 (Pinang).

Diagramma poecilopterum CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 314. Pondicherry.—SCHLEGEL, Fauna Japon., Poiss., pts. 2–4, 1843, p. 61 (Japan).—RICHARDSON, Ichth. China Japan, 1846, p. 227 (China).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 329 (copied).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 154 (Nagasaki, Japan).

Plectorhynchus poecilopterus JORDAN and SNYDER, Annot. Zool. Japon., 1901, p. 78 (East Indies, Japan, Yokohama).—JORDAN and EVERMANN, Proc. U. S. Nat. Mus., vol. 25, 1903, p. 349 (Keerun and Giran, Formosa).—JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, No. 4, Aug. 28, 1909, p. 187 (copied).

Diagramma balteatum (KUHL and VAN HASSELT) CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 316. No locality [Java].

Plectorhynchus balteatus CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, No. 2, 1849, p. 1060 (Singapore).

Diagramma moaiab (MONTROUZIER) THIOLLIÈRE, Fauna Woodlark, 1857, p. 157 (name in synonymy).

Diagramma labiosum MACLEAY, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 202. Wide Bay, Queensland.

Spilotichthys labiosus OGILBY, Proc. Roy. Soc. Queensland, vol. 21, 1908, p. 25.

Depth 2½ to 2¾; head 3 to 3⅓, width 2 to 2⅕. Snout 2⅛ to 2⅞ in head; eye 3⅖ to 5½, 1 to 2½ in snout, 1 to 1¼ in interorbital or greater than interorbital in young; maxillary reaches ⅕ in eye in young and not quite to eye with age, expansion 1⅓ to 3½ in eye, length 2¾ to 3¼ in head; slit along each side of snout in front; lips thick, rather broad, fleshy, not reaching hind maxillary end; teeth pointed, conic, in rather wide bands in jaws; palate and tongue toothless; interorbital 3⅞ to 4⅓, convex; preopercle edge finely serrate, serrae about 32. Gill rakers 6+14, pointed, ⅓ of eye.

Scales 82 to 117 along lateral line to caudal base and 10 to 17 more on latter; tubular scales 57 to 70 in lateral line to caudal base and 9 to 12 more on latter; 17 to 19 scales above lateral line, 20 to 22 below, 48 to 68 predorsal until midway in space between snout tip and nostrils, 20 to 25 rows on cheek. Suprascapula finely serrated. Scales with 6 or 7 basal radiating striae; apical denticles 56 to 58, small, pointed, with 10 or 11 transverse series of basal elements; circuli fine.

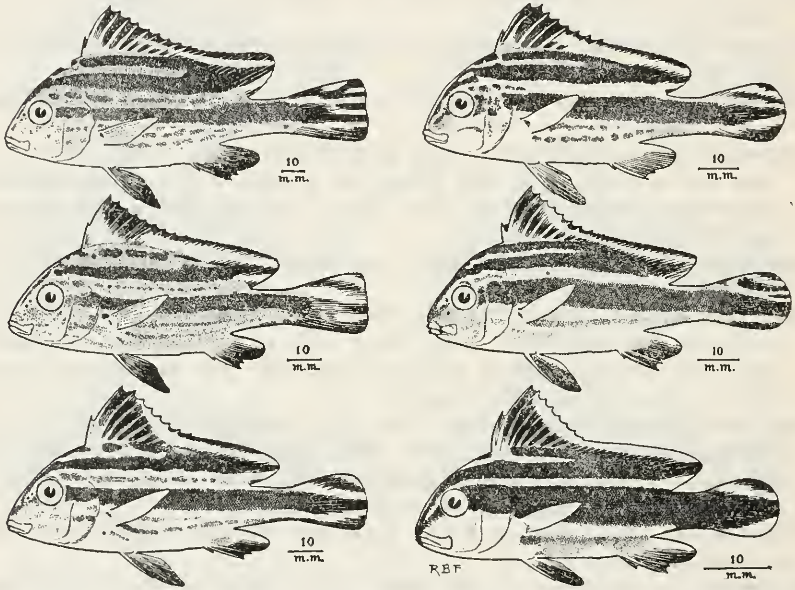

FIGURE 23.—PLECTORHINCHUS PICTUS (THUNBERG). VARIATION OF COLOR MARKINGS

D. X or IX, 23, I to 25, I, third spine 2 to 3 in head, seventeenth ray 2 to 2⅙; A. III, 7, I, third spine 2⅖ to 3, second ray 1⅔ to 1⅘; caudal 1 to 1⅓, little emarginate, rounded in young; least depth of caudal peduncle 2⅞ to 3; pectoral 1¼ to 1⅔; ventral 1⅕ to 1¾.

Brown generally, paler on sides and below. Head above, back, dorsals, and caudal marked with close-set rounded darker blotches, each much wider than pale interspaces and fading out on sides and below. Iris brownish. Lower caudal lobe, anal and ventral blackish. Pectoral pale.

Red Sea, Arabia, Zanzibar, Mozambique, Delagoa Bay, Natal, Persian Gulf, Seychelles, India, Ceylon, Pinang, Singapore, East Indies, Philippines, Tonkin, China, Formosa, Riu Kiu, Japan, Melanesia, Polynesia. Great variation with age is noticeable. The young are quite unlike the adults and have five dark longitudinal bands, these gradually narrowed as 2 or 3 principal dark bands. The lowest bands break as spots and the intermediate upper pale areas or bands form with dark line in each which gradually breaks into spots. The black bands from the body extend on the dorsals and caudal and break into spots on these fins gradually. In old examples, often when preserved in alcohol, all spots disappear except traces on the fins, where they are small, numerous and crowded.

7949. Batangas market. June 7, 1908. Length 165 mm.
5513. Catbalogan. April 15, 1908. Length 295 mm.
18826, 18830. Cebu market. March 27, 1909. Length 88 to 168 mm.
5416. Cebu market. April 7, 1908. Length 385 mm.
14179 to 14181. Cebu market. July 2, 1909. Length 111 to 140 mm.
18806. Cebu market. August 21, 1909. Length 125 mm.
12880. Cotabato. May 20, 1909. Length 178 mm.
7483, 7494, 7495. Endeavor Strait, near anchorage, Palawan. Length 302 to 383 mm.
7545. Endeavor Strait. December 23, 1908. Length 372 mm.
4938 to 4940 [822]. Iloilo market. March 29, 1908. Length 60 to 100 mm. Sides of body with alternating stripes of pearl blue and seal brown; first of pearl blue short bar at bases of first to fourth dorsal spines narrow; buff yellow stripe narrower than orbit from cheek to caudal, becomes dusky on under surface of head; dorsals black, with curved white band from fifth dorsal spine to tip of eighteenth soft ray; twentieth to twenty-first rays white; caudal black, with two slightly oblique white stripes on upper half; another horizontal on lower half; tip of small spines white, rest of spines and anterior ⅔ of fin black, posterior third white; ventral spine and first to third rays black, posterior 2 rays white; pectoral hyaline. Smaller specimen with ground color almost black. Pearl blue stripes narrower and not so extended. Cheeks, lower side of head, breast and belly sulphur yellow. White of fins tinged with yellow.
5171. Jolo market. March 6, 1908. Length 250 mm.
5877. Malabang market, Mindanao. May 22, 1908. Length 610 mm.
7725. Manila market. March 20, 1908. Length 257 mm.
9708. Manila market. April 28, 1908. Length 184 mm.
9037 to 9039. Nabatas Point. July 24, 1909. Length 221 to 345 mm.
5482. San Juanico Strait. April 13, 1908. Length 239 mm.
6917. Santo Domingo, Batan. November 7, 1908. Length 583 mm.
A642 to A644. Simaluc Sibi Sibi Island. September 23, 1909. Length 381 to 463 mm.
5940. Zamboanga market. May 26, 1908. Length 314 mm.
A686. Danawan Island, Borneo. September 26, 1909. Length 475 mm. Ground color of head and body slaty gray, over this reddish bronzy wash,

along background color fades to dusky yellowish; both head and body abundantly spotted with brown, spots on head roundish from size of nostril to about half nostril diameter; spots on back immediately under dorsal fin also roundish and somewhat larger; above lateral line spots apparently irregularly scattered, ground color between assumes in places sort of hexagonal reticulation, below lateral line spots follow rows of scales giving rise to oblique stripes upward and backward; spots much smaller on lower portion than on upper portion of body, none on lower head, breast or belly or lower part of peduncle; dorsal and upper part of caudal margined by dusky, becoming almost black on posterior part of dorsal, body of fin yellow, with large brown or blackish spots larger than any on body, nearly one-half diameter of pupil; none on terminal portion of fin for distance equal to breadth of spot; lower part of caudal, including all but two rays of lower half, bluish black, showing little of spots at base; anal and ventrals similar, but not quite so darkly colored, without spots except on scaled part; pectoral hyaline; rays slaty gray, except underneath; few yellowish spots in axil and black at upper base externally; inside of mouth scarlet, apparently only in patches on vomer and one on each side of mouth above and in corners below.

5047. Sandakan, Borneo. February 29, 1908. Length 242 mm.

6803. Kowloon market, China. September 18, 1909. Length 268 mm.

20635. Kowloon market. September 26, 1909. Length 112 mm.

6862. Kowloon market. October 22, 1909. Length 114 mm.

8143 U.S.N.M. Hong Kong, China. W. Stimpson. Length 149 mm.

32721 U.S.N.M. Indian archipelago. Royal Museum Leiden. Length 168 mm.

53027. U.S.N.M. Jolo. Bureau of Fisheries. Length 230 mm.

56309 U.S.N.M. Cavite. Dr. G. A. Lung. Length 75 to 140 mm. 3 examples.

57605 U.S.N.M. Japan. P. L. Jouy. Length 90 to 286 mm. 8 examples. As *Plectorhynchus diagrammus*.

59749 U.S.N.M. Hamashima, Japan. Dr. H. M. Smith. Length 81 to 95 mm. 2 examples.

71201 U.S.N.M. Kagoshima. Bureau of Fisheries. Length 90 mm.

71269 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection 1906. Length 110 mm.

72669 U.S.N.M. Java. Bryant and Palmer. Length 202 mm.

75487 U.S.N.M. Nagasaki. Jordan and Snyder. Length 165 to 178 mm. 2 examples.

75488 U.S.N.M. Nagasaki. Jordan and Snyder. Length 240 mm.

76642 U.S.N.M. Takao, Formosa. Dr. F. Baker. Length 64 to 91 mm. 3 examples.

84184 U.S.N.M. Cebu. Dr. F. Baker. Length 99 mm.

25136 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 381 mm. When fresh in alcohol mostly drab gray, little darker or more drab above. Head and greater portion of body, especially above and on back, with numerous olivaceous yellow spots. Side of head with similar colored horizontal streaks and bars. Fins, except pectoral, with yellowish olive spots, more or less inclining to deep brown or blackish terminally; this more especially on soft dorsal, anal and caudal, which deep brown or grayish black on outer portions. Spots on vertical fins numerous and rather small. Pectoral pale, tinged with olive yellow. Ventral similar, tip dusky, reddish basally. Iris pale orange. Peritoneum white.

Genus HAPALOGENYS Richardson

Hapalogenys Richardson, Ann. Mag. Nat. Hist., vol. 13, 1844, p. 462. Type *Hapalogenys nitens* Richardson, designated by Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 550.

Body compressed, elevated. Mouth moderate, horizontal. Upper jaw protractile. Chin with several pores, hidden by cluster of short, crowded barbels or papillae, best developed with age; snout tip naked or with small papillae. Teeth uniformly small, in bands in jaws, on vomer and palatines. Preopercle serrate. Opercle with short spine. Branchiostegals 6 or 7. Pseudobranchiae present. Air bladder simple. Pyloric appendages few. Scales 50 to 100 in lateral series, ctenoid. Soft vertical fins scaled basally. Head above, including snout, jaws and opercles, scaly. One dorsal, spines 11 to 14 and 1 antrorse spine in front, rays 14 to 19. Anal with 3 spines and rays 9 to 13. Caudal rounded or slightly concave. Pectoral pointed.

ANALYSIS OF SPECIES

a^1. Dorsal rays 18 or 19.
  b^1. D. XIV, 18 -- meyenii.
  b^2. D. XI, 19 -- petersi.
a^2. Dorsal rays 14 or 15.
    c^1. Fourth dorsal spine more than half length of head.
      d^1. Brown, clouded darker ------------------------------ nigripinnis.
      d^2. Four dark horizontal bands -------------------------- kishinouyei.
    c^2. Third dorsal spine longest, at least ⅔ of head; soft dorsal narrowly edged black -- mucronatus.

HAPALOGENYS MEYENII Peters

Hapalogenys meyenii Peters, Monatsb. Akad. Wiss. Berlin, 1866, p. 96. Manila.—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1877, p. 13 (copied).

Depth 3⅔ in total; head 4⅔. Eye 4 in head, 1½ in snout; maxillary reaches eye; profile line between nostrils somewhat concave; hind preopercle edge denticulate; upper lip with little papillae or barbels. Scales 103, 14 above, 15 below. D. XIV, 18, fourth spine equals 1⅔ eye diameters; A. III, 10, first spine very short, second and third subequal, only little shorter than dorsal spines; dorsal and anal fins rounded; caudal deeply concave. Largest scales on middle of body brown, glazed metallic yellow. Dark line passes through middle of scales. Length? (Peters.)

HAPALOGENYS PETERSI Day

Hapalogenys petersi Day, Fishes of India, pt. 1, 1875, p. 77, pl. 20, fig. 3. Sind and Mekran coast; Fauna Brit. India, Fishes, vol. 1, 1889, p. 513, fig. 155.—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran).

Depth 2¾; head 2¾. Snout 3⅖ in head from upper jaw tip; eye 3½, equals snout, greater than interorbital; maxillary reaches ⅖ in eye, expansion 1⅘, length 2½ in head from snout tip; lips thick, with chin and lower surface of lower jaw with innumerable closely set fine papillae having barbel like prolongations but without any grooves or deep pores; teeth villiform in jaws, on vomer and palate; interorbital low, nearly level. Scales in lateral line 100. D. XI, 19, third spine $4\frac{3}{4}$ in total head length, fourth ray $2\frac{1}{8}$; A. III, 13, third spine 5; first ray $2\frac{1}{10}$; caudal $1\frac{2}{5}$, slightly emarginate; least depth of caudal peduncle $2\frac{7}{8}$; pectoral $1\frac{3}{4}$; ventral $2\frac{1}{5}$. Blackish gray, fins darker. Length 458 mm. (Day.)

India.

HAPALOGENYS NIGRIPINNIS (Schlegel)

Pogonias nigripinnis Schlegel, Fauna Japon., Poiss., pts. 2–4, 1843, p. 59, pl. 25. Nagasaki Bay.

Hapalogenys nigripinnis Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 317 (China).—Steindachner, Ann. Naturhist. Hofmus. Wien, vol. 11, 1896, Heft 2, p. 198 (Kobe, Hiogo, Nagasaki).—Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 46 (Aburatsubu).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 551 (Wakanoura and Tsuruga).—Evermann and Shaw, Proc. California Acad. Sci., ser. 4, vol. 16, No. 4, Jan. 31, 1927, p. 117 (Ningpo).

Hapalogenis nigripinnis Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 48, 1884, p. 10 (Tokyo).

Hapalogenys nitens Richardson, Ann. Mag. Nat Hist., vol. 13, 1844, p. 463. Canton; Zool. Voy. Sulphur, Fish, 1844, p. 84, pl. 43, figs. 1–2 (China Seas, Macao).

Hapalogenys maculatus Richardson, Ichth. China Japan, 1846, p. 235. China Seas, Canton.—Bleeker, Verh. Batav. Genootsch., No. 4, vol. 26, 1857, p. 65 (Nagasaki); Act. Soc. Sci. Ind. Néerland., vol. 3, No. 10, 1857, p. 5 (Japan).

Depth $1\frac{4}{5}$ to 2; head $2\frac{1}{3}$ to $2\frac{3}{4}$, width $1\frac{4}{5}$ to 2. Snout $2\frac{1}{3}$ to $3\frac{1}{10}$ in head; eye $4\frac{1}{3}$ to $5\frac{4}{5}$, $1\frac{1}{3}$ to $2\frac{2}{5}$ in snout, $1\frac{1}{3}$ in interorbital, greater than interorbital in young; lips fleshy, papillate; teeth bluntly conic, minute, outer rows larger; interorbital $4\frac{1}{2}$ to $4\frac{3}{5}$, convex; preopercle edge denticulate. Gill rakers 6+12, lanceolate, robust, $1\frac{3}{4}$ in eye.

Scales 48 to 50 in lateral line, 66 counted along above lateral line, 56 counted along below; 11 or 12 scales above lateral line, 18 or 19 below, predorsal 47 extending little forward of nostrils, 22 rows on cheek of which 6 on preopercle flange. Scales with 8 to 12 basal radiating striae; apical denticles 45 or 46, slender, with 7 or 8 transverse series of basal elements; circuli fine.

D. XI, 15 or 16, fourth spine $2\frac{1}{10}$ to $2\frac{1}{4}$ in head, fifth ray $2\frac{1}{10}$ to $2\frac{1}{4}$; A. III, 9, second spine $2\frac{2}{3}$ to $4\frac{3}{5}$, third ray $2\frac{1}{5}$ to $2\frac{1}{4}$; caudal $1\frac{3}{5}$ to 2, convex behind; least depth of caudal peduncle $2\frac{7}{8}$ to 3; pectoral $1\frac{2}{5}$ to 2; ventral $1\frac{1}{2}$ to $1\frac{3}{4}$.

Brown, clouded darker, below pale. Ventrals blackish terminally in young.

China, Japan.

59734 U.S.N.M. Kochi. Dr. H. M. Smith. Length 134 mm.
75497 U.S.N.M. Wakanoura. Jordan and Snyder. Length 268 mm.

HAPALOGENYS KISHINOUYEI Smith and Pope

Hapalogenys kishinouyei Smith and Pope, Proc. U. S. Nat. Mus., vol. 31, 1907, p. 476, fig. 6. Urado.—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 554, fig. 3 (copied).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 150 (Takamatsu).

Depth 1⅞; head 2½. Snout 3⅓ in head; eye 3, greater than snout or interorbital; maxillary reaches ⅖ in eye, length 2¾ in head; bands of villiform teeth in jaws, anterior little larger; mandibular papillae minute, close set; interorbital 4, convex; preopercle denticulate, teeth much coarser around angle. Gill rakers 5+11, short, thick.

Scales 50 in lateral line (figure shows 59 to caudal base and 5 more may be counted over latter), 15 above, 21 below, predorsal extending forward well into interorbital, 11 rows on cheek to preopercle ridge and 3 more rows on flange. Scales with 6 basal radiating striae; 20 to 26 apical denticles, with 1 to 3 transverse series of basal elements; circuli fine.

D. I, XII, 14, fourth erect spine 1½ in head, fourth ray 1⅔; A. III, 9, i, second spine 1⅘, fourth ray 2; caudal 1½, convex behind; least depth of caudal peduncle 2⅘; pectoral 1⅖; ventral 1⅕.

Silvery gray, with 4 reddish brown horizontal bands; first along spinous dorsal base; second from middle of predorsal to middle of soft dorsal base; third from eye to base of last dorsal ray and front of caudal peduncle; fourth from cheek to pectoral base then to lower edge of caudal peduncle. Vertical fins and ventrals blackish, other fins paler. Length 115 mm.

Only known from the type Cat. No. 55610 U.S.N.M. Urado, southern Japan. May 10, 1903. Dr. H. M. Smith.

HAPALOGENYS MUCRONATUS (Eydoux and Souleyet)

Pristipoma mucronata Eydoux and Souleyet, Voy. Bonite, Zool., vol. 1, 1841, p. 161, pl. 2, fig. 1. Macao, China.

Hapalogenys mucronatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 318 (China).—Bleeker, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. (56)58 (Amoy).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 54.—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 553 (Kobe, Onomichi, Hiroshima).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 150 (Osaka).—Tanaka, Fishes of Japan, vol. 45, Dec. 28, 1928, p. 888, pl. 181, fig. 495 (Tadanoumi).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong).

Hapalogenis mucronatus Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 48, 1883, p. 11 (Osaka).

Hapalogenys analis Richardson, Ichth. China Japan, 1846, p. 235. Sea of China, Canton; Zool. Voy. Sulphur, Fish, 1846, p. 85, pl. 43, fig. 3.

Depth 2; head 2⅗ to 2⅔, width 2. Snout 2½ to 2⅔ in head; eye 3½ to 3⅘, 1⅕ to 1¼ in snout, greater than interorbital; maxillary reaches opposite eye, expansion 1½ to 2¼ in eye, length 2½ to 2⅗ in head; teeth in villiform bands in jaws, of about 4 irregular rows anteriorly; interorbital 4⅓ to 4½, slightly convex; preopercle serrate. Gill rakers 6+14, lanceolate, short, little shorter than gill filaments or 2¼ in eye.

Scales along above lateral line 67, below 58 to 60; pores in lateral line 47; 10 scales above lateral line, 19 below, 45 predorsal forward slightly before nostrils, 10 rows on cheek of which 4 on preopercle flange. Scales with 8 to 10 short basal marginal striae; apical denticles 48 to 65, small, with 3 or 4 transverse series of basal elements; circuli fine.

D. XI, 15, third dorsal spine 1⅓ to 1⅖ in head, third ray 1⅖ to 2; A. III, 10, second spine $1\frac{9}{10}$ to 2⅛, third ray 2¼ to 2⅘; caudal 1½, slightly obtuse angled behind; least depth of caudal peduncle 3⅛ to 3⅕; pectoral 1¾ to 1⅘; ventral 1⅖ to 1⅗.

Brown, below paler. Spinous dorsal membranes and ventrals blackish terminally. Edges of soft dorsal and anal narrowly blackish.

China, Japan.

6835. Hong Kong market. October 18, 1909. Length 240 mm.

75498. U.S.N.M. Hiroshima, Japan. Jordan and Snyder. Length 166 to 172 mm. 2 examples.

75499 U.S.N.M. Onomichi. Jordan and Snyder. Length 157 to 164 mm. 2 examples.

75500 U.S.N.M. Kobe. Jordan and Snyder. Length 173 mm.

Genus SCOLOPSIS Cuvier

Scolopsis Cuvier, Règne Animal, vol. 2, 1817, p. 280. Type *Scolopsides kurite* Cuvier=*Anthias vosmeri* Bloch, designated by Bleeker, Arch. Néerland. Sci. Nat. Harlem, vol. 11, 1876, p. 270.

Ghanan Forskal, Descript. Animal., 1775, pp. xii, 44. Atypic. Type *Sciaena ghanam* Forskål, virtually, assumed through vernacular. (Inadmissible.)

Scolopsides Cuvier, Règne Animal, ed. 2, vol. 2, 1829, p. 178. Type *Scolopsides kurite* Cuvier, designated by Jordan and Evermann, Genera of Fishes, pt. 1, 1917, p. 128.

Lycogenis (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 346. Type *Lycogenis argyrosoma* (Kuhl and Van Hasselt) Cuvier= *Scolopsides lycogenis* Cuvier, monotypic.

Parascolopsis Boulenger, Ann. Mag. Nat. Hist., ser. 7, vol. 7, 1901, p. 262. Type *Parascolopsis townsendi* Boulenger, monotypic.

Leptoscolopsis Tanaka, Zool. Mag., Tokyo, vol. 27, 1915, p. xix. Type *Leptoscolopsis nagasakiensis* Tanaka.

Body oblong, symmetrical. Snout moderate. Eye moderate or large. Mouth small, nearly horizontal, jaws equal and upper protractile. Chin without central groove. No barbels. Teeth small, slender, acute, in bands in jaws. Preorbital naked, more or less distinct spine hooked backward on second suborbital; below usually 1 or more points. Preopercle serrated. Opercle with small spine. Pseudobranchiae present. Branchiostegals 5 or 6, last one very small. Air bladder simple. Pyloric appendages 5. Scales rather large, 35 to 50 in lateral series, ctenoid. Head, including front and opercles, scaly. Vertical fins scaleless. Dorsal single, with 10 spines, 9 to 11 rays. Anal spines 3, rays 6 to 8. Caudal emarginate. Pectoral pointed.

Assembled in this genus are a number of well defined species, many quite similar structurally, though often very diverse in coloration. De Vis has described two nominal forms which do not permit of acceptance at present:

Scolopsis specularis De Vis.[19]

Depth 2⅔ in length; head 3⅔. Eye 3 in head, covered by thick, protruberant transparent mucus. Preopercle not notched, hind limb and rounded angle strongly denticulate. Preorbital spine moderate, with 1 precedent denticle; preorbital ½ eye. D. X, 8; A. III, 7, spines subequal in length and strength. Tail emarginate. First pectoral ray slightly produced. Light brown. Conspicuous pearly line, edged with black, behind hinder half of dorsal; another, formed of markings on bases of scales along middle of posterior half of body. Length not given.

Scolopsis plebaeius De Vis.[20]

Depth 3¼ without caudal; head 4¼. Snout 3⅓ in head; eye 2½, edge with single preorbital spine and 2 feeble denticulations beneath on one side, not on other; interorbital 3; hind preopercle limb vertical and strongly serrated, produced angle with 3 large flat denticulations; upper profile gibbous over nape. D. X, 9; A. III, 7, third spine equal to second, much weaker. Pale brown. Line of oval white spots at base of first dorsal and front half of second, running out along middle of second; on last 5 webs of first and first of second dorsal black spot between white one and base of spine. Length 152 mm.

Leptoscolopsis nagasakiensis Tanaka I have been unable to consult from the above citation.

ANALYSIS OF SPECIES

a^1. PARASCOLOPSIS. Infraorbital without distinct backwardly directed spine below eye, its edge usually finely serrate.
  b^1. Body uniform or with pale median longitudinal band.
    c^1. Lower gill rakers 6 or 7; preopercle flange scaly------------townsendi.
    c^2. Lower gill rakers 11; preopercle flange naked----------------eriomma.
  b^2. Body with 6 dark transverse saddlelike bands; hind infraorbital edge denticulate--inermis.

---

[19] Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 369. Queensland.
[20] Idem, vol. 9, 1884, p. 400. Queensland.

a^2. Infraorbital with enlarged, distinct, backwardly directed spine below eye.

d^1. SCOLOPSIS. Maxillary without external denticles.

e^1. Some scales on flanks at least with basal black spot; white line on back along bases of dorsals.

f^1. Second white line from eye, another along and close below lateral line and short third one from below eye to pectoral axil. **ghanam.**

f^2. Broad white diffuse band on body forms oblique white bar with black edges behind gill opening__________________**xenochrous.**

e^2. No scales on flanks with basal black spots.

g^1. Each body scale with pearly or yellowish spot_____**margaritifer.**

g^2. Scales without spots.

h^1. No white transverse band from occiput over opercle.

i^1. Red, with blue white band from eye curving along lateral line; blue median band over both dorsals___**taeniopterus.**

i^2. No blue white band along lateral line.

j^1. No yellow ring on postorbital.

k^1. Light longitudinal bands all horizontal.

l^1. White medial longitudinal band from eye to caudal; pale blue band across interorbital_____**personatus.**

l^2. No white medial longitudinal band, narrow white line on back along dorsal bases; white band from maxillary to eye and over postocular to pectoral axil. **phaeops.**

l^3. One to 3 white or yellowish parallel bands, variably connected behind by short pale bars___**cancellatus.**

k^2. Dark medial horizontal band present.

m^1. Dark band expanded medially, often broken as 2 large black lateral blotches_______**bimaculatus.**

m^2. Dark band from eye till above caudal base. **monogramma.**

k^3. Dark and light bands on body inclined posteriorly.

n^1. Broad white medial longitudinal band, gently inclined from eye to upper part of caudal peduncle.

o^1. Broad white band bordered above and below with equally wide blackish band___**longulus.**

o^2. Body with 3 inclined pearly or yellowish bands, first narrow from above eye to last dorsal spines, second from eye to last dorsal rays and expanded medially, third from lower eye edge to middle of side___________**trilineatus.**

n^2. Broad white medial longitudinal band, well inclined, from eye to front of soft dorsal.

p^1. Eye equal to snout or interorbital; upper caudal lobe with filament________**frenatus.**

p^2. Eye greater than snout or interorbital; upper caudal lobe without filament. **bilineatus.**

j^2. Yellow ring at preorbital__________________**temporalis.**

h^2. White transverse band from occiput over opercle; often whitish medial band from gill opening till below front of soft dorsal______________________________________**vosmeri.**

d^2. CTENOSCOLOPSIS, new subgenus. Maxillary with row of close set external denticles; silvery streak along back close to dorsal bases. **ciliatus.**

Subgenus PARASCOLOPSIS Boulenger

Infraorbital without distinct backwardly directed spine below eye, its edge usually finely serrate.

SCOLOPSIS TOWNSENDI (Boulenger)

Parascolopsis townsendi BOULENGER, Ann. Mag. Nat. Hist., ser. 7, vol. 7, 1901, p. 262, pl. 6. N. lat. 24°–25° E. long. 57°, in 198 to 225 fathoms (Sea of Oman).

Depth $2\frac{3}{5}$ to $2\frac{3}{4}$; head $2\frac{3}{5}$ to $2\frac{3}{4}$. Snout $4\frac{7}{8}$ in head; eye 3 to $3\frac{2}{3}$, greater than snout, equals interorbital; maxillary reaches $\frac{1}{3}$ in eye, expansion $2\frac{1}{2}$ in eye, length $3\frac{3}{5}$ in head; bands of small conic teeth in jaws, outer largest; interorbital nearly level; suborbital and preopercle borders finely denticulated, depth of former above maxillary expansion $\frac{1}{3}$ of eye. Gill rakers 6 or 7 below, very short, tubercular. Scales 45 to 48 along lateral line, tubular scales 37 to 42; 4 or 5 scales above lateral line, 14 below. D. X, 8 or 9, fourth spine $2\frac{1}{2}$ in head, first ray $2\frac{7}{8}$; A. III, 7, third spine $2\frac{7}{8}$, first ray 3; caudal $1\frac{1}{2}$, emarginate; least depth of caudal peduncle $3\frac{7}{8}$; pectoral $1\frac{1}{3}$; ventral $1\frac{1}{2}$. Uniform reddish, with more or less distinct silvery lateral stripe. Length 160 mm. (Boulenger.)

Sea of Oman.

SCOLOPSIS ERIOMMA Jordan and Richardson

Scolopsis eriomma JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, No. 4, 1909, p. 188, pl. 70. Takao, Formosa.—JORDAN and STARKS, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 451 (Ceylon; paratypes).

Depth $2\frac{3}{5}$; head $3\frac{1}{3}$. Snout 5 in head from snout tip; eye 3, greater than snout, equals interorbital; maxillary reaches $\frac{1}{8}$ in eye, expansion $3\frac{1}{5}$, length $3\frac{1}{4}$ in head from snout tip; teeth in jaws fine, villiform, in broad bands, few outer slightly enlarged as very weak canines; interorbital but little elevated; infraorbital depth over maxillary expansion $3\frac{1}{4}$ in eye (very small spine shown on lower edge below center of eye). Lower gill rakers 11. Scales 48 (though figure shows at most about 44 inclusive of those on caudal base); tubular scales 35 in lateral line; 3 scales above lateral line, 11 below, 11 predorsal forward opposite last $\frac{2}{5}$ of eye, 4 rows on cheek with preopercle flange naked. D. X, 9, fourth spine $2\frac{1}{8}$ in total head length, fourth ray 2; A. III, 7, third spine $2\frac{1}{10}$, first ray $1\frac{9}{10}$; caudal $3\frac{1}{8}$ in combined head and body to caudal base; pectoral $3\frac{1}{8}$; least depth of caudal peduncle $2\frac{3}{4}$ in total head length; ventral $1\frac{1}{4}$. Light straw, tinged pinkish along middle of side, belly whitish. Probably reddish in life. Length 228 mm. (Jordan and Richardson.)

Ceylon, Formosa. Described without comparison, though evidently allied with *Scolopsis townsendi.* Though Boulenger's specimens were much smaller, with fewer gill rakers and the preopercle flange scaly, possibly the latter were rubbed off in *Scolopsis eriomma*, and the apparent differences really only of age.

SCOLOPSIS INERMIS (Schlegel)

Scolopsides inermis SCHEGEL, Fauna Japon., Poiss., pts. 2–4, 1843, p. 63, pl. 28, fig. 1. Japan.—BLEEKER, Verh. Batav. Genootsch., No. 4, vol. 26, 1857, pp. 5, 83 (Nagasaki); Nat. Tijds. Nederland Indië, vol. 20, 1859–1860, p. 235 (Nagasaki).—JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol 33, 1901, p. 751 (Yokohama).—SMITH and POPE, Proc. U. S. Nat. Mus., vol 31, 1907, p. 477 (Kagoshima).

Scolopsis inermis GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 357 (copied).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 4, pl. (63) 341, fig. 5 (Sangir; Nagasaki).—STEINDACHNER and DÖDERLEIN, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 48, pt. 1, 1883, p. 14 (Kagoshima).—KLUNZINGER, Fische Roth. Meer., 1884, p. 32, pl. 7, fig. 3.—BOULENGER, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—ISHIKAWA and MATSUURA, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 54.—FRANZ, Abh. Bayer. Akad. Wiss., vol 4, Suppl. Band 1, 1910, p. 47 (Aburatsubu).—JORDAN and THOMPSON, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 555 (Nagasaki).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Mekran; Oman).—IZUKA and MATSUURA, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 150 (Tateyama, Boshiu).

Heterognathodon guliminda (not CUVIER) ISHIKAWA and MATSUURA, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 54 (Kagoshima).

Heterognathodon doderleini ISHIKAWA and MATSUURA, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 10, pl. 4. Kagoshima. (On above example.)

Depth 2⅖ to 2⅔; head 3 to 3⅛, width 1⅞ to 2⅕. Snout 3⅓ to 3⅖ in head from upper jaw tip; eye 3⅛ to 3¼, greater than snout to subequal, greater than interorbital; maxillary reaches ⅕ to ¼ in eye, expansion ½ of eye, length 2⅗ to 2¾ in head from upper jaw tip; teeth villiform, outer row little enlarged; interorbital 3⅕ to 3¾, little convex; infraorbital edge with 4 or 5 posterior denticles of which upper largest; preopercle edge finely denticulate. Gill rakers 6+5, short tubercles.

Scales 35 or 36 in lateral line to caudal base and 0 to 2 more on latter; 5 scales above lateral line, 11 below, 13 predorsal to occiput and 5 rows on cheek to preopercle ridge. Scales with 10 to 12 basal radiating striae; apical denticles 88 to 132, small slender points, with 11 to 15 transverse series of basal elements; circuli very fine.

D. X, 9, I, fourth spine 2⅓ to 2½ in total head length, fourth ray 1⅞; A. III, 7 or 8, third spine 2⅞ to 6; caudal 1⅛ to 1⅕, hind edge concave; least depth of caudal peduncle 2⅞ to 3; pectoral 1⅕ to 1¼; ventral 1¼ to 1⅖.

Brown, with 5 or 6 ill defined vertical bands on back. Fins uniform pale brown.

Arabia, East Indies, Japan.

57597 U.S.N.M. Japan. P. L. Jouy. Length 180 to 215 mm. 2 examples.
59748 U.S.N.M. Kagoshima. Dr. H. M. Smith. Length 99 to 118 mm. 2 examples.
71525 U.S.N.M. Kagoshima. Bureau of Fisheries. Length 136 to 153 mm. 2 examples.

Subgenus SCOLOPSIS Cuvier

Infraorbital with enlarged, distinct, backwardly directed spine below eye. Maxillary without external denticles.

SCOLOPSIS GHANAM (Forskål)

Sciaena ghanam FORSKÅL, Descript. Animal., 1775, pp. XII, 50. Djedda and Lohaja, Red Sea.—BONNATERRE, Tabl. Ichth., 1788, p. 123 (Red Sea).—GMELIN, Syst. Nat. Linn., vol. 1, 1789, p. 1302 (Arabia).—WALBAUM, Artedi Pisc., vol. 3, 1792, p. 318 (on FORSKÅL).

Grammistes ghanam SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 187 (Red Sea).

Holocentrus ghanam LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, pp. 328, 348 (Arabia).

Scolopsides ghanam CUVIER, Hist. Nat. Poiss., vol. 5, 1831, p. 348 (Massauah, Red Sea).

Scolopsis ghanam GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 362 (no locality).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 30 (Zanzibar; Aden).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 739 (Koseir, Red Sea).—DAY, Fishes of India, pt. 1, 1875, p. 86, pl. 22, fig. 4.—MARTENS, Preuss. Exped. Ost Asien, 1876, p. 387 (Larentuka, Flores).—SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 40 (Savaii).—PÖHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Savaii).—KLUNZINGER, Fische Roth. Meer., 1884, p. 34.—BOULENGER, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 522.—BORSIERI, Ann. Mus. Civ. Stor. Nat. Genova, vol. 41, 1904, p. 196 (Massaua).—REGAN, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 330 (Persian Gulf).—PELLEGRIN, Annuario Mus. Zool. R. Universit. Napoli, n. s., vol. 3, No. 27, July 11, 1912, p. 6 (Red Sea).—FOWLER, Mem. Bishop Mus., vol. 10, 1929, p. 210 (compiled).

Scolopsis lineatus (? not QUOY and GAIMARD) RÜPPELL, Atlas Reise Nördl. Afrika, Fische, 1828, p. 7, pl. 2, fig. 1. (Southern part of Red Sea); Neue Wirbelth., Fische, 1835, p. 126.

Scolopsis ocularis (EHRENBERG) RÜPPELL, Atlas Reise Nördl. Afrika, Fische, 1828, p. 7 (name in synonymy).

Scolopsides burukuarem THIOLLIÈRE, Fauna Woodlark, 1857, p. 159. Woodlark Island.

Depth 2⅗; head 3⅕. Snout 3¾ in head; eye 3, greater than snout, equals interorbital; maxillary reaches to or ¼ in eye, length 3 in head; teeth fine in jaws; interorbital but slightly elevated; infraorbital spine strong, edge below denticulate, also lower edge and also of suborbitals denticulate; hind preopercle edge serrate, coarsely so around lobe at angle. Scales 46 in lateral line, 4 above, 14 below, predorsal scales extend forward opposite front pupil edge, 4 rows on cheek to preopercle ridge, flange naked. D. X, 9, third spine $2\frac{1}{3}$ in head, fifth ray $1\frac{4}{5}$; A. III, 7, third spine $2\frac{2}{3}$, first ray $2\frac{1}{8}$; caudal 1, well forked; least depth of caudal peduncle $2\frac{2}{3}$; pectoral $1\frac{1}{5}$; ventral $1\frac{1}{4}$. Back olive. Yellowish white band from snout to bases of dorsal spines; second from above orbit to end of dorsal fin base; third from snout, where arising in common with one from opposite side, passes through upper part of eye and at shoulder divides in two, one extending along above lateral line and becomes lost on back of tail, other below lateral line lost on last fourth of body; fourth along preorbital and suborbital ring of lines lost above pectoral base, which with black axillary spot. Most scales below lateral line in front $\frac{2}{3}$ of body with black basal spot. Violet mark at base of either caudal lobe. Length 170 mm. (Day.)

Red Sea, Arabia, Persian Gulf, Zanzibar, India, Andamans, East Indies, Melanesia.

SCOLOPSIS XENOCHROUS Günther

Scolopsis xenochrous Günther, Ann. Mag. Nat. Hist., ser. 4, vol. 10, 1872, p. 423. Misol, Moluccas; Cruise of Curaçoa, Brenchley, 1873, p. (410) 420, pl. 31 (type).

Scolopsis bulanensis Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 85, fig. 5. Bulan, Philippines.

Depth $2\frac{7}{8}$ to $3\frac{1}{8}$; head 3 to $3\frac{1}{4}$, width $1\frac{2}{3}$ to 2. Snout $2\frac{9}{10}$ to 3 in head; eye 3, 1 to $1\frac{1}{10}$ in snout, 1 to $1\frac{1}{10}$ in interorbital; maxillary reaches nearly opposite front eye edge, expansion 3 to $3\frac{1}{3}$ in eye, length $3\frac{1}{5}$ to $3\frac{1}{2}$ in head; teeth in villiform bands in jaws; interorbital $2\frac{7}{8}$ to $3\frac{1}{5}$ in head, very slightly convex with median depression; hind preopercle edge rather coarsely denticulate; infraorbital spine about $\frac{1}{3}$ of eye. Gill rakers 5+5 short, round, low tubercles.

Scales 41 in lateral line to caudal base and 3 more on latter; 4 scales above lateral line, 9 below, 25 to 27 predorsal forward opposite hind nostril, 5 or 6 rows on cheek to preopercle ridge and 1 row on preopercle flange. Suprascapula denticulate. Scales with 6 to 10 basal radiating striae; apical denticles 108 to 110 with 3 or 4 transverse series of basal elements; circuli fine.

D. X, 9, i, fourth spine $2\frac{1}{2}$ in head, first ray $2\frac{1}{3}$; A. III, 7, i, second spine $2\frac{1}{2}$ to $2\frac{7}{8}$, first ray $2\frac{1}{5}$ to $2\frac{1}{3}$; caudal $1\frac{1}{8}$ to $1\frac{1}{5}$, deeply forked, lobes sharply pointed and upper little longer; least depth of caudal peduncle $2\frac{7}{8}$ to 3; pectoral $1\frac{1}{5}$ to $1\frac{1}{4}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$.

Back olivaceous, under surface pale to whitish. White oblique band on preorbital horizontally from maxillary. Narrow white line along back above close to dorsal bases. Rather broad oblique short white bar from suprascapula, bordered above and below broadly with black. Posteriorly along middle of flanks 5 oblique rows of dusky olive small spots, one to each scale. Finally or still posteriorly an elongated whitish blotch nearly twice diameter of eye. Iris pale reddish or yellowish brown. Broad dusky brown area on opercle vertically. Fins all pale brownish, little darker terminally.

East Indies, Philippines. There is little doubt but that *Scolopsis bulanensis* Evermann and Seale is the young. They say it is related to *Scolopsis personatus* but there is no question they ignored Günther's excellent figure in their comparison, as their selection of *Scolopsis personatus* is irrelevant.

A413, A414. Jolo market. March 7, 1908. Length 180 to 210 mm. Back olivaceous. Narrow blue stripe along dorsal bases. Silvery yellow blotch just above middle of side under dorsal posterior. Lateral line slightly dusky, under its origin pearl blue blotch placed along incline of scales, bordered on either edge of an interrupted sepia line; between latter and silvery blotch 5 or 6 oblique lines made up of about 4 round dots in each. Lower head and body merging into a dusky white tint. Snout above darker than rest of head. Preorbital below with bluish stripe in front of spines. Dusky blotch at top of opercle. Dorsal very pale, slightly pinkish posteriorly. Edges of caudal lobe brick red, center yellowish, very pale. Anals and ventrals almost colorless, with slight wash of straw yellowish. Pectorals pale pink. Lips and roof of mouth posteriorly pinkish.

55909 U.S.N.M. Bulan, Sorsogon. Bureau of Fisheries (3845). Length 108 mm. Type of *Scolopsis bulanensis*.

SCOLOPSIS MARGARITIFER (Cuvier)

Scolopsides margaritifer Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 337. Waigiu.—Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, Nov. 2, 1831, p. 98 (Offbach Bay, Waigiu).—Bleeker, Nederland. Tijdschr. Dierk., vol. 4, 1874, p. (117) 150 (China); Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (39) 317, fig. 2.

Scolopsis margaritifer Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 355 (no locality).—Kner, Reise Novara, Fische, 1865, p. 58 (Singapore).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 3 (Sumatra, Batu, Singapore, Biliton, Java, Duizend Islands, Celebes, Halmahera, Buru, Amboina, Waigiu).—Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876, p. 271 (Cape Grenville, Queensland).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 154 (Singapore).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 283 (Macassar; Banda).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 208 (compiled).

Scolopsis margaritiferum Evermann and Seale. Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 84 (Bacon, Bulan).

Scolopsides pectinatus (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 346. Java.

Scolopsis pectinatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 362 (copied).

Scolopsis macrophthalmus Ramsay and Ogilby, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 238 (New Guinea); ser. 2, vol. 10, 1886, p. 10 (Port Moresby, New Guinea).

Depth 2⅕ to 2½; head 3 to 3⅛, width 1⅘ to 2. Snout 3 to 3⅖ in head; eye 2⅗ to 3⅛, greater than to subequal with snout, greater than interorbital in young to 1 to $1\frac{1}{8}$ with age; maxillary not quite reaching opposite front eye edge or only slightly beyond, expansion 3 to $3\frac{2}{5}$ in eye, length 3 to $3\frac{1}{5}$ in head; teeth in rather broad villiform bands in jaws, in about 10 irregular series anteriorly; interorbital $2\frac{3}{4}$ to $3\frac{1}{8}$, broadly convex; preopercle strongly denticulate, with 20 or 21 serrae on hind edge, lowest little larger, only a few distinct on lower edge; infraorbital spine 2 to $2\frac{1}{3}$ in eye. Gill rakers 6+6, low tubercles, half of gill filaments, which $2\frac{1}{2}$ in eye.

Scales 36 or 37 in lateral line to caudal base and 4 more on latter; 4 or 5 scales above lateral line, 11 below, 34 to 36 predorsal forward until above nostrils, 6 rows on cheek of which 2 on preopercle flange. Suprascapula and scale below serrated. Scales with 8 to 13 basal radiating striae; apical denticles 125 to 160, with single series of basal elements; circuli very fine.

D. X, 9, I, third spine $2\frac{1}{5}$ to $2\frac{2}{5}$ in head, first ray $2\frac{1}{4}$ to $2\frac{1}{3}$; A. III, 7, I, third spine $2\frac{1}{8}$ to $2\frac{3}{5}$, first ray 2 to $2\frac{1}{4}$; caudal 1 to $1\frac{1}{8}$, well forked; least depth of caudal peduncle $2\frac{1}{3}$ to $2\frac{2}{5}$; ventral $1\frac{1}{10}$ to $1\frac{1}{5}$; pectoral $2\frac{3}{4}$ to 3 in combined head and body to caudal base.

Back light olive brown, edges of scales darker and each with paler or slightly grayish spot. Sides and under surface light brownish, each side with basal brassy spot. Snout darker brown than rest of head. Preorbital coppery. Upper flap of opercle with submarginal dark brown streaks. Iris light yellowish brown. Vertical fins uniformly brown, paired ones lighter.

Singapore, East Indies, Philippines, China, Queensland. Known chiefly by its large scales and the body without any conspicuous markings. Bleeker's figure shows two pale streaks before the eye, which not distinct in my materials. I follow Bleeker in placing *Scolopsides pectinatus* as a synonym, as he examined the type in Leiden.

4964, 4965, 11115, 12994, 17750. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 180 to 221 mm.

14887, 14888, 17765. Alimango Bay, Burias Island. March 5, 1909. Length 185 to 204 mm.

17759. Balikias Bay. August 17, 1908. Length 226 mm.

9304, 9305. Biri Channel. June 1, 1909. Length 203 to 205 mm.

9491, 15873. Bolalo Bay, Palawan. December 21, 1908. Length 207 to 214 mm.

8867. Buang Bay, Talajit Island. March 15, 1909. Length 176 mm.

12452. Bugsuk Island. January 5, 1909. Length 127 mm.

8065, 8365, 9007. Busin Harbor, Burias Island. April 22, 1908. Length 188 to 199 mm.

14979. Calangaman Island. March 16, 1909. Length 230 mm.

12945, 12946, 17406 to 17409. Candaraman Island. January 4, 1909. Length 119 to 165 mm.

10974, 11186, 11187, 17070. Canmahala Bay, Luzon. March 11, 1909. Length 153 to 186 mm.

21055. Capunuypugan Point, Generale Island. May 9, 1908. Length 205 mm.

7636, 7637, 11699. Capunuypugan Point. May 10, 1908. Length 170 to 195 mm.

7626, 7627. Cataingan Bay, Masbate. April 17, 1908. Length 156 to 167 mm.

16862. Cataingan Bay. April 18, 1908. Length 135 mm.

5516. Catbalogan, Samar. April 15, 1908. Length 252 mm. Back dark olive, scales broadly bordered with still darker; lower sides with yellow spots, body of scales silvery with some dusky, bordered with very pale olive yellow; breast washed with yellowish; side of head with pearly reflections; bright prussian blue on suborbital beginning near corner of mouth, or as line merely indicated by spots; serrated edge of preopercle white, without membrane; inside of jaws chinese orange; dorsal olive, becoming madder brown posteriorly, narrowly margined with yellow; caudal brown, rays dusky, tip of upper lobe yellow; anal yellow, narrowly margined white; paired fins yellow, front of ventral white; membranes of pectoral hyaline; iris dark with some silver.

5620, 5624, 12225, 13328. Caxisigan Island. January 2, 1909. Length 143 to 198 mm.

18834 to 18836. Endeavor Strait, Palawan. December 22, 1908. Length 146 to 170 mm.

139. Endeavor Strait. December 23, 1908. Length 123 mm.

9210. Guntao Island, Palawan. December 20, 1908. Length 198 mm.

9364, 9365. Langao Point, Luzon. June 24, 1909. Length 223 to 224 mm.

5777. Lianga Bay. May 12, 1908. Length 215 mm.

7925, 10879. Limbones Cove, Luzon. February 8, 1909. Length 193 to 228 mm. Soft dorsal and lower caudal lobe reddish brown. Caudal lobe yellow, lower fins yellow.

18538. Little Santa Cruz Island. May 28, 1908. Length 203 mm.

6850. Little Santa Cruz Island. January 2, 1909. Length 220 mm.

11135, 11136. Lode Bay, Destacado Island. March 13, 1909. Length 225 to 237 mm.

8999. Mactan Cove. April 6, 1908. Length 165 mm.

7876. Maculabo Island. June 14, 1909. Length 183 mm.

6286. Malapascua Island. March 16, 1909. Length 218 mm.

12021, 12529. Malcochin Harbor. December 19, 1908. Length 185 to 187 mm.

7625. Manila market. March 20, 1908. Length 146 mm.

6180. Mansalay, Mindoro. June 4, 1908. Length 243 mm.

5444, 5115. Mantacao Island. April 8, 1908. Length 175 to 218 mm.

6575. Maricaban Island near Sepoc. September 21, 1908. Length 230 mm.

14233. Mariveles wharf. January 30, 1909. Length 99 mm.

12140, 12142, 12144, 12146. Masamat Bay, Quinalasag Island. June 12, 1909. Length 187 to 210 mm.

15966. Masbate Reef. April 20, 1908. Length 219 mm.

17638. Mompog Island. March 3, 1909. Length 161 mm.

9035. Nabatas Point. July 24, 1909. Length 245 mm.

6609, 12502. Northwest Verde Island. July 22, 1908. Length 196 to 250 mm.

8214, 15656. Pagapas Bay, Luzon. February 20, 1909. Length 200 to 201 mm.

12519 to 12521. Polloc, Mindanao. May 22, 1908. Length 175 to 200 mm.

8981. Porongpong Island. June 10, 1909. Length 195 mm.

11749, 20678. Port Banalacan, Marinduque. February 23, 1909. Length 185 to 188 mm.

6947, 13102. Port Galera. June 9, 1908. Length 189 to 209 mm.

9178, 11057. Port Jamelo, Luzon. July 13, 1908. Length 202 to 203 mm.

11028. Port Maricaban, Luzon. July 21, 1908. Length 220 mm.

15479, 17175. Port Matalvi, Luzon. November 23, 1908. Length 191 to 193 mm.

15153, 15154. Port Uson, Busuanga Island. December 17, 1908. Length 201 to 205 mm.

5701, 5702. Pujada Bay. May 10, 1908. Length 186 to 197 mm.

5086 to 5091, 20765. Pujada Bay. May 15, 1908. Length 147 to 193 mm.

19924. Romblon Harbor. March 25, 1908. Length 155 mm.

12016. San Miguel Harbor. April 21, 1908. Length 201 mm.

12226. Santa Cruz Island. April 24, 1908. Length 210 mm.

17826 to 17829 [143]. Simaluc Island, Sulu. February 19, 1908. Length 171 to 205 mm. Back greenish, central area of scales pale, margins much darker; below lateral line general color much lighter, becoming silvery on lower side and belly; dark areas on scales which olive above, become chrome below, the whole forming oblique broken bands pointing backward along rows of scales. Top of head greenish and olive; greenish blue line from snout above nostril around upper rim of orbit, breaking into scattered blue spots on temporal region; line of azure blue under eye, may be solid or series of round dots; single spot on preorbital above. Dorsal variously shaded with olive green and opalescent; upper part of soft portion reddish brown; opalescence appearing as roundish spots or blotches on basal part; whole fin narrowly tipped with chrome. Caudal citron above, purplish below, narrowly tipped with white in crotch. Anal citron yellow, tipped with white. Ventral and pectoral chrome; spine and tip of first ray in ventral white. Iris very dark golden, silvery shades above; inner angle of mouth orange, lower lip and front of premaxillary white.

5726, 5727, 9398. Surigao. May 8, 1908. Length 180 to 220 mm.

15608, 16200. Taganak Island. January 7, 1909. Length 207 to 216 mm.

9517. Tara Island. December 15, 1908. Length 146 mm.

5828. Tataibada Point. May 15, 1908. Length 208 mm.

6594. Tulnalutan Island. September 9, 1909. Length 214 mm.

13385, 16084 to 16086. Ulugan Bay, Channel north of Oyster Inlet, Palawan. December 28, 1908. Length 131 to 206 mm.

5361. Bumbum Island, Borneo. September 25, 1909. Length 188 mm.

13462. Limbe Strait, Celebes. November 9, 1909. Length 170 mm.

30607 U.S.N.M. New Guinea. Australian Museum. Length 184 mm.

56032 U.S.N.M. Bacon. Bureau of Fisheries (3736). Length 208 mm.

72673. U.S.N.M. Java. Bryant and Palmer. Length 193 mm.

SCOLOPSIS TAENIOPTERUS (Cuvier)

Scolopsides taeniopterus (KUHL and VAN HASSELT) CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 345. Java.

Scolopsis taeniopterus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 10, pl. (65)343, fig. 5 (Banka; Java).

Depth 3⅘; head 2⅘, width 1⅘. Snout 2½ in head; eye 3⅞, 1½ in snout, 1⅕ in interorbital; maxillary not quite reaching eye, length 2⅘ in head; teeth villiform, in narrow bands in jaws; interorbital 3⅕, convex; hind preopercle edge with small denticles. Gill rakers 5+5, short tubercles.

Scales 44 in lateral line to caudal base and 5 more on latter; 5 scales above lateral line, 11 below, 28 predorsal forward above nostrils, 6 rows on cheek of which 2 on preopercle flange. Scales with 12 basal radiating striae; apical denticles 140 to 145, minute points, with 12 to 15 transverse series of basal elements; circuli very fine.

D. X, 9, I, third spine 3 in head, seventh ray 1⅘; A. III, 7, I, third spine 3¾, first ray 2⅗; caudal 1⅕, well emarginate; least depth of caudal peduncle 2⅘; pectoral 1⅓; ventral 1⅓.

Pale brown, largely uniform, whitish below. Traces of several parallel gray vertical close set bars on caudal base.

East Indies.

72672 U.S.N.M. Java. Bryant and Palmer. Length 230 mm.

SCOLOPSIS PERSONATUS (Cuvier)

Scolopsides personatus Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 344. Batavia.—Bleeker, Verh. Kon. Akad. Wet. Amsterdam, No. 3, vol. 18, 1879, p. 1 (Mauritius).

Scolopsis personatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 360 (copied).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 9, pl. (63)341, fig. 4 (Sumatra, Singapore, Java, Celebes, Ternate, Amboina).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 154 (Singapore).—Weber, Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 263 (Thursday Island).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 209 (compiled).

Depth 2⅘ to 2⅞; head 3, width 2. Snout 2⅘ to 3 in head from snout tip; eye 3⅛ to 3⅗, equals snout to 1⅕, subequal with interorbital; maxillary reaches eye or ¼ in eye, length 2⅔ to 2¾ in head from snout tip; teeth villiform, in bands; interorbital 3 to 3⅓, slightly convex; hind preopercle edge strongly denticulate; infraorbital spine moderate. Gill rakers 5+5, short tubercles.

Scales 45 or 46 in lateral line and 4 or 5 more on latter; 5 scales above lateral line, 12 below, 30 to 33 predorsal scales forward opposite nostrils, 5 rows on cheek to preopercle ridge and 4 more rows on preopercle flange. Scales with 7 or 8 basal radiating striae; apical denticles 97 to 105, small slender points, with 6 to 15 transverse series of basal elements; circuli very fine.

D. X, 10, I or 9, I, fourth spine 2⅗ to 2¾ in total head length, first ray 1½ to 2½; A. III, 7, I, third spine 3⅕ to 3⅗, first ray 2⅞ to 3⅛; caudal 1 to 1⅒, hind edge emarginate; least depth of caudal peduncle 2⅘ to 2⅞; pectoral 1⅕ to 1¼; ventral 1⅕ to 1⅓.

Brown, pale to whitish below. Pale band across interorbital from one eye to another. Pale diffuse median lateral band indistinct. Fins all pale.

Mauritius, Singapore, East Indies, Queensland.

A584. Busbus Point, Siasi Island. September 20, 1909. Length 245 mm.

22779, 22780. Busin Harbor, Burias Island. March 8, 1909. Length 204 to 225 mm.

14079. Capunuypugan Point, Generale Island. May 9, 1908. Length 147 mm. (damaged).

10962. Cataingan Bay, Masbate. April 10, 1908. Length 129 mm.

9362, 18557. Langao Point, Luzon. June 24, 1909. Length 153 to 181 mm.

19202, 19204. Maagnas, Lagonoy Gulf, Luzon. June 7, 1909. Length 145 to 167 mm.

16949. Mahinog, Camiguin Island. August 3, 1909. Length 184 mm.

18580, 18581. Malanipa Island, east of Zamboanga. September 8, 1909. Length 145 to 148 mm.

9380, 15609. Taganak Island. January 7, 1909. Length 152 to 193 mm.

A1542. Doc Can Island, Sulu Sea. January 7, 1910. Length 230 mm.

56205 U.S.N.M. Bulan. Bureau of Fisheries (3278). Length 170 mm.

SCOLOPSIS PHAEOPS (Bennett)

Scolopsides phaeops Bennett, Proc. Zool. Soc. London, 1831, p. 165. Mauritius.

Scolopsides phoeops Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 176, pl. 6, fig. 2 (Réunion, Seychelles, Madagascar).

Scolopsis phaeops Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 358 (type).—Day, Fishes of India, pt. 1, 1875, p. 85, pl. 22, fig. 2; Fauna Brit. India, Fishes, vol. 1, 1889, p. 521.—Johnstone, Rep. Pearl Oyster Fisher. Gulf of Manaar, pt. 2, 1904, p. 221 (off Aripu reef).—Pearson, Ceylon Administr. Rep., 1912–1913, pt. 4, p. E15 (Gulf of Manaar).—Zugmayer, Abhandl. K. Bayer, Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Mekran).

Scolopsis nototaenia Playfair, Fishes of Zanzibar, 1865, p. 29. Aden.

Scolopsis nototaenia Playfair, Fishes of Zanzibar, 1865, pl. 5, fig. 2. (Misprint.)

Depth 2½ to 2⅔; head 2⅞ to 3, width 1⅞ to $1\frac{9}{10}$. Snout 2⅗ to 2¾ in head; eye 3⅕ to 3⅓, 1¼ to 1⅔ in snout, 1 to 1⅛ in interorbital; maxillary reaches to or ⅛ in eye, expansion 2⅗ to 2⅘ in eye, length 2⅖ to 2⅞ in head; teeth in broad villiform bands in jaws, about 7 irregular rows anteriorly; interorbital 3 to 3½, very slightly convex; infraorbital spine 2 to 2⅖ in eye; preopercle edge with minute wide set, bony expansion at angle. Gill rakers 4+5, low tubercles, ½ of gill filaments or ⅓ of eye.

Scales 46 to 48 in lateral line to caudal base and 4 to 6 more on latter; 7 scales above lateral line, 12 or 13 below, 29 to 34 predorsal forward above nostrils, 8 or 9 rows on cheek of which 2 on preopercle flange. Scales with 10 to 12 basal radiating striae; apical denticles 120 to 122, minute, with 9 to 12 transverse series of basal elements; circuli very fine.

D. X, 9, i, fourth spine 2⅘ to 3 in head, first ray 2⅕ to 2⅓; A. III, 7, i, third spine 3⅓ to 3⅘, first ray 2⅔ to 2⅘; least depth of caudal peduncle 2⅘ to 2⅞; pectoral 1¼ to 1⅓; ventral 1⅕ to 1¼; caudal 2⅗ to 2¾ in combined head and body to caudal base, deeply forked, upper lobe longer.

Dull olivaceous brown on back, sides and below nearly buff. Along lateral line anteriorly or from head till below middle of soft dorsal diffuse pale band. Pale or gray streak or narrow band along side of snout close along lower eye edge on infraorbital and then upward over postocular to opercle above and finally down along its postero-superior border toward pectoral axil. Snout little darker brown above than rest of head. Iris yellowish brown. Dorsals paler brown than back and other fins all dull brown. Transverse brown or dark line over pectoral base obliquely.

Arabia, Mauritius, Madagascar, Réunion, Seychelles, Ceylon. Well figured by Day, this species differs from most of those of the East Indian region in the increased scales above the lateral line. A pale line from the snout, arching over the postocular region is characteristic. Unlike most of Playfair's figures that of *Scolopsis nototaenia* is quite poor, though it may have been improvised from the dried example Day mentions in the British Museum as the type. Day gives the length of the species as 242 mm. The figure of *Scolopsis phaeops* by Sauvage also does not show the pale arched postorbital band.

7554. Endeavor Strait, Palawan. December 23, 1908. Length 262 mm.
A1357. Great Tobea Island, Buton Strait. December 15, 1909. Length 265 mm.

SCOLOPSIS CANCELLATUS (Cuvier)

Scolopsides cancellatus CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 351. Hawaii; Waigiu; Rawac, North East New Guinea; Vanicolo; Ulea.—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (31) 309, fig. 2.

Scolopsis cancellatus GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 361 (Sumatra).—DAY, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—GÜNTHER, Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 30 (all Polynesia).—DAY, Fishes of India, pt. 1, 1875, p. 86, pl. 22, fig. 6.—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 5 (Sumatra, Cocos, Java, Bawean, Celebes, Sangir, Solor, Timor, Ternate, Batjan, Amboina, Ceram, Buru, Goram, Guebe, Waigiu, Rawak).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (North Celebes).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 523, fig. 158.—WEBER, Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 263 (Ambon).—SEALE and BEAN, Proc. U. S. Nat. Mus., vol. 32, 1907, p. 244 (Zamboanga).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 281 (Menado; Pepelah Bay, Rotti).—FOWLER, Bull. Bishop Mus., No. 22, 1925, p. 9 (Guam).—VINCIGUERRA, Ann. Mus. Civico Stor. Nat. Genova, series 3, vol. 10, 1926, p. 572 (Sarawak).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 279 (Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 208 (Faté, Agana, Guam, Meos Bundi, Paanopa, Ascension Island); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 641 (Faté; Agaña, Guam).

Scolopsis cancellatum EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 84 (Bacon; Bulan).

Scolopsis cancellata JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 259 (Cuyo).—SNYDER, Proc. U. S. Nat. Mus., vol. 1912, p. 500 (Okinawa).

? *Scolopsis lineatus* QUOY and GAIMARD, Voy. Uranie, Zool. Dec. 18, 1824, p. 322, pl. 60, fig. 3. Small brackish rivers of Waigiu; Guebe Island.—GÜNTHER, Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 31 (Samoa).

Depth 2⅘; head 3 to 3¼, width 1⅞ to 2. Snout 3½ to 3⅞ in head; eye 2⅗ to 3, greater than snout or interorbital, subequal with interorbital with age; maxillary reaches eye, 3⅖ to 3⅔ in head; bands of fine teeth in jaws, palate edentulous; interorbital 3, slightly depressed; infraorbital spine 3½ in eye; preopercle denticulate behind. Gill rakers 5+4, low, broad tubercles, greatly less than gill filaments, which ⅓ of eye.

Scales 40 or 41 in lateral line to caudal base and 3 or 4 more on latter; 4 scales above lateral line, 10 to 11 below, 24 or 25 predorsal forward opposite front pupil edge, 4 rows on cheek to preopercle ridge. Scales with 9 or 10 basal radiating striae and 1 to 6 incomplete auxiliaries; apical denticles 113 to 137, with 5 or 6 transverse series of basal elements; circuli very fine.

D. X, 9, i, third spine 2¼ to 2½ in head, first ray 2¼ to 2½; A. III, 7, i, second spine 2 to 2¼, first ray 2 to 2⅒; caudal 1 to 1⅛, forked; least depth of caudal peduncle 2⅔; pectoral 1⅛ to 1⅕; ventral 1⅕ to 1¼.

Back olive brown to median axis of body, lower half of body white. Head dark brown above. White median line on predorsal to front of interorbital. White line begins over eye each side of median line, extends back to sixth dorsal ray base. Second white line from above nostrils to eye and broadens behind eye, continued to upper part of caudal peduncle anteriorly. Several well spaced, pale obsolete cross shades connect pale lateral bands. Lower border of dark color of back offset by whitish streak medially along side to caudal base. Iris whitish. Fins all more or less pale warm brown. Lower pectoral edge, front of anal, front and bases of ventrals, whitish.

India, Andamans, East Indies, Philippines, Riu Kiu, Melanesia, Micronesia, Polynesia, Hawaii. The color pattern of this species is quite variable in minor details. Two small ones greatly resemble Bleeker's figure of *Scolopsis bleekeri* as there are 3 blackish longitudinal bands above the median axis of the body. The intervening white bands are complete and there is no infraorbital dusky streak to the pectoral axil nor is there a dark spot at the pectoral origin. Likewise, except for the small dark spot at the front of the spinous dorsal the fin is otherwise uniformly pale. These features will readily distinguish the young of the two species.

9286. Basot Island, Pocket Bay. June 11, 1909. Length 167 mm.

16769, 16784. Busin Harbor, Burias Island. March 7, 1909. Length 158 to 177 mm.

7107. Busin Harbor. March 8, 1909. Length 164 mm.

17831, 17832. Butauanan Island, Luzon. June 12, 1909. Length 170 to 175 mm.

16663. Canimo Island near Daet. June 15, 1909. Length 160 mm.

11692, 11695, 12091. Capunuypugan Point, Generale Island. May 10, 1908. Length 177 to 195 mm.

17833. Cataingan Bay, Masbate. April 18, 1908. Length 161 mm.

5092. Cebu market. April 5, 1908. Length 72 mm.

19979. Cebu market. September 3, 1909. Length 74 mm.

10420, 10421. East side Verde Island. July 22, 1908. Length 175 to 193 mm.

9599. Hermana Mayor Island, Luzon. May 8, 1909. Length 174 mm.

5583. Jolo market. February 8, 1908. Length 183 mm.
A426, A425. Jolo market. March 6, 1908. Length 144 mm.
9000. Mactan Cove. April 6, 1908. Length 193 mm.
11238. Mactan Island. March 25, 1909. Length 181 mm.
15676. Near Palag Bay. June 16, 1909. Length 117 mm.
Two examples. Philippines. Length 163 to 174 mm.
6504, 14713. Port Caltom, Busuanga Island. December 15, 1908. Length 185 to 188 mm.
6293, 6294, 7057. Romblon. March 25, 1908. Length 142 mm.
14765. Romblon. March 26, 1908. Length 134 mm.
5935 to 5937, 16974, 16975. Sabtan Island. November 8, 1908. Length 200 to 210 mm.
17548. Sorsogon market. March 12, 1909. Length 165 mm.
4897. Talajit Island, Buang Bay. March 15, 1909. Length 180 mm.
22886. Tataan, Tawi Tawi. March 19, 1909. Length 114 mm.
7145. West coast of Palaui Island. November 18, 1908. Length 195 mm.
6977, 6978. West coast Sabtan Island. November 8, 1908. Length 197 to 213 mm.
14086. Uki, Bouro Island, Dutch East Indies. December 9, 1909. Length 203 mm.
56227 U.S.N.M. Bacon. Bureau of Fisheries (3420). Length 169 mm.
57977 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 187 to 203 mm. 7 examples.

SCOLOPSIS BIMACULATUS Rüppell

Scolopsis bimaculatus RÜPPELL, Atlas Reise Nördl. Afrik., Fische, 1828, p. 8, pl. 2, fig. 2. Massaua; Neue Wirbelth., Fische, 1835, p. 126.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 357 (China Seas).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 30 (Zanzibar).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 740 (Koseir, Red Sea).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (36)314, fig. 1; vol. 8, 1876–1877, p. 10 (Singapore, Bintang, Banka, Java, Bali, Celebes, Ternate, Batjan, Amboina).—DAY, Fishes of India, pt. 1, 1875, p. 85, pl. 22, fig. 1 (Madras).—KLUNZINGER, Fische Roth. Meer., 1884, p. 33.—BOULENGER, Proc. Zool. Soc. London, 1887, p. 657 (Muscat).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 21.—SEALE and BEAN, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 244 (Zamboanga).—PEARSON, Ceylon Administr. Rep., 1912–1913, pt. 4, p. E15 (Gulf of Manaar).—ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Oman).—PEARSON, Ceylon Administr. Report, 1914, pt. 4, p. E6; 1915–18, pp. F16, F17.—JORDAN and STARKS, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 451 (Ceylon).—MALPAS, Ceylon Administr. Report, 1921, pp. E5, E6.—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 210 (compiled).—TIRANT, Service Océanogr. Pêches Indo Chine, 6° Note, 1929, p. 168.

Scolopsides bimaculatus VALENCIENNES, Hist. Nat. Poiss., vol. 5, 1830, p. 340 (Massaua; Ceylon).

Scolopsides taeniatus (EHRENBERG) VALENCIENNES, Hist Nat. Poiss., vol. 5. 1930, p. 340.

Scolopsis taeniatus STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 132 (Gischin, South Arabia).

Scolopsides inermis (not SCHLEGEL) RICHARDSON, Ichth. China Japan, 1846, p. 236.

Scolopsides monogramma (not VALENCIENNES) BLEEKER, Verh. Batav. Genootsch. (Sciaen.), vol. 23, 1850, p. 29 (part).

Scolopsis affinis PETERS, Monatsb. Akad. Wiss. Berlin, 1876 (1877), p. 832. Carteret Harbor, New Ireland; New Britain.

Scolopsis dubiosus WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 282. Macassar.

Depth 2⅖ to 2¾; head 3⅕ to 3¼, width 1⅞ to 2. Snout 2½ to 2¾ in head; eye 3⅖ to 4, 1¼ to 1⅗ in snout, 1⅛ to 1⅓ in interorbital; maxillary reaches opposite eye in young, not quite to eye with age, expansion 2 to 3 in eye, length 2⅘ to 3 in head; teeth in villiform bands in jaws, uniform; interorbital 3, broadly convex; hind preopercle edge with 30 minute denticles, larger at angle and lower edge entire. Gill rakers 5+5, clavate knobs, 1¼ in gill filaments, which ½ of eye.

Tubular scales 45 or 46 in lateral line to caudal base and 2 or 3 more on latter; 4 or 5 scales above lateral line, 11 or 12 below, 30 to 37 predorsal scales forward opposite nostrils, 6 rows on cheek. Suprascapula denticulated. Scales with 12 or 13 basal radiating striae; apical denticles 140 to 167, minute, with 9 or 10 transverse series of basal elements; circuli very fine.

D. X, 9, I, fourth spine 2⅘ to 3 in head, first ray 2⅓ to 2⅖; A. III, 6, I or 7, I, third spine 3⅖, first ray 2⅗ to 2⅘; least depth of caudal peduncle 2½ to 2¾; pectoral 1⅕ to 1¼; ventral 1⅕ to 1⅓; caudal 2¼ to 2⅞ in combined head and body to caudal base, fin deeply emarginate, lobes pointed with upper longer, ending in filament longer than lower.

Back dull olive brown, lower sides pale brown, line of demarcation quite contrasted with dark of upper surfaces just above flanks. Dark brown streak across pectoral base obliquely. Iris light yellowish brown. Fins uniform dull brown.

Red Sea, Arabia, India, Ceylon, East Indies, Philippines, China, Melanesia. The blue preocular band as shown in Bleeker's figure has faded entirely in my specimens.

7602. Endeavor Strait, Palawan. December 24, 1908. Length 255 mm.
A1410. Tampiotana Island. December 21, 1909. Length 325 mm.
47600 U.S.N.M. Red Sea. N. Y. Museum. Length 217 mm. As *Scolopsis lineatus*.
58037 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 290? mm.
72671 U.S.N.M. Java. Bryant and Palmer. Length 198 mm.

SCOLOPSIS MONOGRAMMA (Cuvier)

Scolopsides monogramma (KUHL and VAN HASSELT) CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 338. Java, Batavia.—BLEEKER, Nederland. Tijds. Dierk., vol. 2, 1865, p. 31 (Manila Bay).

Scolopsis monogramma GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859 (Moluccas, Amboina).—DAY, Fishes of India, pt. 1, 1875, p. 86, pl. 22, fig. 5.—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 11, pl. (57)335, fig. 3.—GÜNTHER, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 52 (Philippines).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 154 (Singapore).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 15 (North

Celebes, Macassar).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 522.—JOTDAN and EVERMANN, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 349 (Keerun, Fermosa).—DUNCKER, Mitt. Naturalist, Mus. Hamburg, vol. 21, 1903 (1904), p. 150 (Singapore).—JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, No. 4, 1909, p. 188 (Giran, Formosa).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 209 (Faté; Fiji); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 641 (Faté).

Scolopsis monogrammus EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 85 (Bulan).

Depth 2⅗ to 2⅔; head 3⅛ to 3¼, width 1⅞ to 2. Snout 2⅖ to 2½ in head; eye 4¼ to 4⅖, 1¾ to 1⅘ in snout, 1⅓ to 1⅖ in interorbital; maxillary reaches eye, falls little short with age, expansion 1¾ to 3 in eye, length 2¾ to 3 in head; teeth in broad villiform bands of 8 or 9 irregular series; interorbital 3 to 3⅛, broadly convex; hind preopercle edge with 20 to 25 moderate denticulations and 3 to 5 at angle little enlarged; infraorbital spine 2⅗ to 3 in eye. Gill rakers 4 + 5 short low tubercles, about ½ of gill filaments, which ½ of eye.

Scales 44 or 45 in lateral line to caudal base and 3 to 5 more on latter; 6 scales above lateral line, 12 or 13 below, 30 to 32 predorsal extending forward above nostrils, 9 rows on cheek of which 3 on preopercle flange. Suprascapula and scale below finely denticulated. Scales with 11 basal radiating striae and 5 incomplete auxiliaries; apical denticles 122 to 165, with 1 to 17 transverse series of basal elements; circuli fine.

D. X, 9, I, third spine 2⅞ to 3 in head, second ray 2 to 2⅛; A. III, 7, I, third spine 3⅕ to 3¼, first ray 2⅖ to 2⅔; least depth of caudal peduncle 2½ to 2⅘; pectoral 1⅕ to 1¼; ventral 1⅛ to 1⅕; caudal 2⅔ to 3 in combined head and body to caudal base.

Back pale olive, below cream buff to buff. On sides just below curve of lateral line posteriorly about dozen or more oblique very slightly darker lines, following along courses of scales. Iris yellowish brown. Before squamous area of interorbital dark brown band across forehead preceded by pale band which extends just over nostrils, rest of anterior part of head also dark brown. Lips pale. Fins all pale brown, paired ones slightly lighter. Pectoral axil pale. Dark streak from pectoral origin down across base of fin.

India, Singapore, East Indies, Philippines, Formosa, Melanesia, Polynesia. A rather large species, with pale band across snout includes nostrils, preopercle edge rather coarsely denticulated and dark bar across pectoral base. Bleeker had but 3 examples, 190 to 260 mm., though his figure agrees with my materials.

7585 [1234]. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 238 mm. Upper parts pale smoky blue. Lower parts white to silvery. Three pale yellowish blue longitudinal stripes parallel to profile of back above lateral line; 18 to 20 diagonal stripes below lateral line. Yellow bar over snout connecting upper parts of iris. Snout smoky purple, above yellow bar, darker smoky purple below bar. Dorsal with olive yellow edge, membrane in front of nearly every spine olive yellow, membrane behind each spine blue, bordered with reddish; membranes near outer edge of fin violet hyaline. Hind caudal edge hyaline, rest of fin olive yellow.

3262 to 3264 [D. 5360]. Corregidor Light, N. 74° W., 6.9 miles (14° 21′ N., 120° 41′ E.), Manila Bay. February 8, 1909. Length 94 to 113 mm.

20449. Nato, Luzon. June 19, 1909. Length 85 mm.

20501. Santa Maria. August 11, 1909. Length 77 mm.

7845. Taganak Island. January 7, 1909. Length 310 mm. Pearl gray, greenish shades above; obscure brown stripes through centers of scale rows above lateral line, similar but more yellowish stripes on middle of side diagonally downward and forward; yellow bar crossing upper portion of snout from eye to eye, blue bar above dorsal hyaline purplish, margin narrowly lemon yellow with dashes and dots of same color on body membranes.

6436, 6437. Tilig. July 14, 1908. Length 263 to 280 mm.

A1124. Powati, Makyan Island. November 29, 1909. Length 248 mm. Pale olive gray, with slight iridescence through middle, lower portions silvery white; naked snout slaty purple; dusky spot appears in central base of anterior spinous dorsal; hinder edge of preopercle yellowish on teeth; inside of lower jaw with red wash; dorsal mottled with lemon and pearly, dash of purplish in upper portion of each portion forming definite oblique bar on posterior spinous membranes and along inframarginal portion of soft fin; caudal cadmium, shading more or less on to peduncle, margin in fork dusky hyaline; anal hyaline with slight silvery shade in middle of soft part; ventrals hyaline with dash of yellowish; pectoral membranes hyaline, upper rays clear sulphur and first two dusky with some ochry coloration at base; upper portion of orbit with dash of orange; iris brown clouded with silvery and little orange.

12176. Powati Harbor, Makyan Island. November 28, 1909. Length 158 mm.

56075 U.S.N.M. Bulan. Bureau of Fisheries (3277). Length 148 mm.

SCOLOPSIS LONGULUS Richardson

Scolopsis longulus RICHARDSON, Ann. Mag. Nat. Hist., vol. 9, 1842, p. 389. Torres Straits.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 363 (types; Torres Strait).

Scolopsides leucotaenia BLEEKER, Nat. Tijds. Nederland. Indië, vol. 3, 1852, p. 451. Banka or Lepar Island.

Scolopis leucotaenia GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 363 (copied).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (16)294, fig. 4; vol. 8, 1876–1877, p. 4 (Banka, Celebes, Ceram, Amboina, Nussa Laut).—DAY, Fishes of India, pt. 1, 1875, p. 88, pl. 23, fig. 4.—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 279 (Philippines); Mem. Bishop Mus., vol. 1928, p. 208 (New Guinea).

Scolopsis leucotaenoides BLEEKER, Naturk. Tijdschr. Nederland. Indië, vol. 8, 1855, p. 439. Manado, Celebes.

Scolopsis leucotaenioides GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 263 (compiled).

Depth 2⅞ to 3; head 3 to 3⅕, width 2. Snout 3½ to 4⅛ in head; eye 2⅗ to 4⅛, greater than snout or interorbital; maxillary reaches eye, 3⅕ to 3⅓ in head; bands of fine teeth in jaws, none on palate or tongue; interorbital 3$\frac{1}{10}$ to 3⅕, but slightly convex; hind preopercle edge denticulate; infraorbital spine along upper edge 2¾ to 3¼ in eye. Gill rakers 5 + 5, short, thick points, greatly less than gill filaments, which 3⅖ in eye.

Scales 36 in lateral line to caudal base with 2 or 4 more on latter; 4 scales above lateral line, 10 or 11 below, 27 to 30 predorsal forward opposite front nostril, 4 rows on cheek to preopercle ridge. Scales with 9 or 10 basal radiating striae; apical denticles 74 to 83, with 6 or 7 transverse series of basal elements; circuli very fine.

D. X, 8, I or 9, I, third spine 2 to 2⅛ in head, first ray 1$\frac{9}{10}$ to 2⅛; A. III, 7, I, third spine 2 to 2$\frac{1}{10}$, first ray 1⅘ to 1⅞; caudal 1 to 1$\frac{1}{10}$, well forked; least depth of caudal peduncle 2½ to 2⅗; pectoral 1$\frac{1}{10}$ to 1⅛; ventral 1⅕ to 1¼.

Pale brownish generally. Iris slate gray. Deep dusky brown band begins over eye and extends back above lateral line to bases of last dorsal rays. Another parallel dark brown band from snout tip to eye and along middle of side to caudal base medially. Both dark bands less than pupil in width. Fins all brownish, lower paler and spinous dorsal with blackish brown blotch anteriorly and medially, broadly over first 4 membranes.

India, East Indies, Philippines, North Australia. I feel that *Scolopsis longulus* Richardson, as described originally and later by Günther is evidently the present species. Depth 4 in total length; head rather exceeds depth. Eye 3¾ in head, little less than snout. Preorbital ¾ wide as eye, with small spine and some denticulations below. Hind preopercle edge finely denticulate. Opercle spine very short. Scales 42 in lateral line, 3 above, 15 below; predorsal scales forward to hind fourth of orbit. Preorbital and preopercle flange naked. Surascapula strongly denticulate. D. X, 9; A. III, 7; fin spines moderate, second anal spine shorter than third. Yellowish band, broadly edged blackish above and below from above pectoral to caudal base; 2 indistinct blackish lines above lateral line. Length 135 mm.

5183. Alibijaban Island, Luzon. March 6, 1909. Length 137 mm.

19367, 19369, 19370. Beach near Caiholo River, Ulugan Bay, Palawan. December 29, 1908. Length 66 to 77 mm.

8872. Buang Bay, Talajit Island. March 15, 1909. Length 97 mm.

22154. Canmahala Bay, Luzon. March 11, 1909. Length 89 mm.

13175. Cataingan Bay, Masbate. April 17, 1908. Length 102 mm.

10701, 16860. Cataingan Bay. April 18, 1908. Length 67 to 108 mm. 7 examples [557, 558]. Dusky and olivaceous above; blackish stripe from nuchal region to axil of dorsal, somewhat below base of dorsal, wide as pupil; narrower blackish stripe obscurely on snout, through eye and distinctly backward to caudal base; below strongly washed yellow, most brilliant in small specimen; above axial line paler area from eye to caudal; dorsal with spinous portion yellowish, membranes tipped bright yellow; black blotch about half the size of eye on the first 3 membranes in middle; posterior portion of dorsal brownish orange, marginal yellow fading out after first 3 membranes; caudal pale, rays dusky, upper lobe yellowish, lower orange; anal pale yellow, tipped with white; ventral same with white front; pectoral still paler, becoming whitish terminally below; iris brown.

21921. Cebu market. September 1, 1909. Length 60 mm.

16336, 16337. Chase Head, Endeavor Strait. December 22, 1908. Length 80 to 93 mm.

136. Endeavor Strait, Palawan. December 23, 1908. Length 110 mm.

6805. Gigoso Point, Quinapundan Bay, Samar. July 28, 1909. Length 106 mm.

16907. Makesi Island, Palawan. April 5, 1909. Length 98 mm.

12753. North end Endeavor Strait, Palawan. December 22, 1908. Length 100 mm.

22529 [812]. Port Uson, west of Pinas Island. December 17, 1908. Length 80 mm. Black lateral stripe from snout to base of caudal, above olivaceous; more dusky just above front half of lateral line; side of head and body under axial lateral line with lemon yellow shades, brightest on head; breast and belly silvery, with some yellow; dorsal similar to adjacent body; black blotch on first 3 membranes below center; soft fin with orange membranes, hyaline; caudal rays dusky, membranes hyaline yellow; lower fins and pectoral hyaline yellow.

14177. Santa Cruz Island. April 24, 1908. Length 80 mm.

20974. Usada Island, Jolo. March 3, 1908. Length 120 mm.

20033. Bumbum Island, Borneo. September 25, 1909. Length 68 mm.

21326. Great Tobea Island. December 15, 1909. Length 89 mm.

30655 U.S.N.M. New Guinea. Australian Museum. Length 135 mm.

SCOLOPSIS TRILINEATUS Kner

Scolopsis trilineatus Kner, Sitz. Ber. Akad. Wiss. Wien, vol. 57, pt. 1, 1868, pp. 27, 30, pl. 2, fig. 5. Savay, Samoa.—Günther, Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 31, pl. 25, fig. A (Samoa, Fiji).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 5, pl. (53)331, fig. 2 (Ternate, Amboina).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Savaii).—Fowler, Bull. Bishop Mus., No. 22, 1925, p. 33 (Samoa); Mem. Bishop Mus., vol. 10, 1928, p. 208 (Faté and Apia); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 641 (Apia; Faté).

Scolopsis trilineata Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905(1906), p. 268 (Apia and Pago Pago).

Depth 3 to 3⅕; head 3⅕ to 3¼, width 1⅞ to 2. Snout 3⅕ to 3⅖ in head; eye 3 to 3⅛, greater than snout, equals interorbital; maxillary reaches opposite eye, expansion 3⅖ to 3¾ in eye, length 3 to 3⅛ in head; teeth fine, simple, conic, in about 5 irregular series with outer row little enlarged; interorbital 2⅗ to 3, broadly convex; preopercle edge with 13 or 14 rather irregular large denticles. Gill rakers 6+6, tubercles, ½ of gill filaments which ⅓ in eye.

Scales 38 to 42 in lateral line to caudal base and 3 or 4 more on latter; 4 scales above lateral line, 11 below, 16 to 20 predorsal extending forward opposite middle of eye, 5 rows on cheek to preopercle flange. Suprascapula serrate. Scales with 8 or 9 basal radiating striae; apical denticles 92 to 106, small, with 1 or 2 transverse series of basal elements; circuli very fine.

D. X, 9, I, third spine 2⅕ to 2⅖ in total head length, first ray 2⅓ to 2½; A. III, 7, I, third spine 1¼ to 2⅖, first ray 1⅞ to 2; caudal 1⅕ to 1¼, well forked; least depth of caudal peduncle 2⅖ to 2⅗; pectoral 1⅓ to 1⅖; ventral 1⅕ to 1¼.

Back olivaceous to brown, sides little brown and under surfaces little pale, evidently whitish in life. Median pale or whitish predorsal line to interorbital. Creamy band horizontally across snout above nostrils, from one eye to another; above another band, less distinct, from one upper eye edge to other eye; still another pale band around snout end to each eye; pale line or band above eye each side of median band; whitish band from upper hind eye edge along back till below bases of front dorsal spines. Another band extends from upper hind eye edge till below bases of last dorsal rays, anteriorly little distinct. Lowest white line slopes from lower hind eye edge up to lateral line below middle of spinous dorsal, ending abruptly. Iris pale yellowish brown. Fins all uniformly pale.

East Indies, Melanesia, Polynesia. Most of my examples show variation individually, as the light lines are not exactly alike in any.

12448, 12449. Bugsuk Island. January 5, 1909. Length 157 to 170 mm.
17404, 17405. Candaraman Island. January 4, 1909. Length 175 to 177 mm.
19980. Cebu market. September 3, 1909. Length 94 mm.
10554, 13206. Jolo Island. March 7, 1908. Length 143 to 203 mm.
11281, 17650, 17651. Pandanon Island. March 23, 1909. Length 138 to 141 mm.
15919. Pangasinan Island, Jolo. February 13, 1908. Length 179 mm.
18605. Tambun Sigambul, Tonquil Island, south of Zamboanga. September 14, 1909. Length 188 mm.
8216, 19830. Tataan. February 20, 1908. Length 108 mm.
9950, 9951. Doc Can Island, Sulu Sea. January 7, 1910. Length 128 to 138 mm.
52528 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 128 to 193 mm. 4 examples.
75899 U.S.N.M. Borneo. H. C. Raven. Length 189 mm.
31668 to 31672 A. N. S. P. Apia. Bureau of Fisheries. Length 138 to 183 mm.

SCOLOPSIS FRENATUS (Cuvier)

Scolopsides frenatus Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 343. Seychelles; Mauritius.—Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 175, pl. 28, fig. 3, *a–b* (type; Mauritius).

Scolopsis frenatus Günther, Cat. Fish. Brit. Mus., vol 1, 1859, p. 361 (copied).—Playfair, Fishes of Zanzibar, 1866, p. 30 (Seychelles).

Depth 2¾; head 3⅓. Snout 3¾ in head; eye 3½, subequal with snout and interorbital; maxillary reaches $\frac{1}{10}$ in eye, length 3⅛ in head; interorbital little convex; preorbital depth above maxillary expansion 2¼ in eye; infraorbital spine moderate, 1½ in eye, with 4 denticles below; preopercle edge denticulate. Scales 45 in lateral line (figure shows 50 but last 2 on caudal base); 14 scales above lateral line, 15 below, predorsal apparently extend forward opposite front eye edge, 4 rows on cheek to preopercle ridge and flange naked. Suprascapula finely denticulate (entire on figure). D. X, 9, fourth spine 2 in head, first ray 2⅙; A. III, 7 (but 2 spines on figure), second spine 3, first ray 2½; least depth of caudal peduncle 2¾; pectoral 1; ventral 1⅕; lower caudal lobe 3 in combined head and body to caudal base, upper lobe 2⅕ with terminal filaments, fin deeply forked. Golden yellow, sides and below white. Snout violaceous brown above, stripe forward of blue or silvery and from behind eye to third dorsal ray. Silvery band of snout extends under eye. Young with black spot on tail. Length 263 mm. (Sauvage.)

Seychelles, Mauritius. Though Günther has translated " a green band from the eye to the third dorsal spine " Cuvier says " un ruban d'un beau vert, qui part de derriére l'oeil et monte vers le troisième rayon de la dorsale " which appears to me to refer to the third dorsal ray. This would then place the species as allied with *Scolopsis bilineatus.*

SCOLOPSIS BILINEATUS (Bloch)

Anthias bilineatus Bloch. Naturg. Ausländ. Fische, vol. 7, 1793, p. 3, pl. 325, fig 1. Japan.—Forster, Fauna Indica, 1795, p. 16.—Schneider, Syst. Ichth. Bloch, 1801, p. 306 (Japan).

Scolopsides bilineatus Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 336 (no locality).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (45) 323, fig. 2.

Scolopsis bilineatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 357 (Amboyna; Celebes).—Day, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—Günther, Cruise of Curaçoa, Brenchley, 1873, p. 409 (Solomons), p. 410 (Misol).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 7, pl. (64) 342, fig. 1 (Sumatra, Java, Bawean, Celebes, Sangir, Halmaheira, Ternate, Ceram, Amboina, Saparoa, Banda, Solor, Waigiu, New Guinea).—Day, Fishes of India, pt. 1, 1875, p. 85, pl. 22, fig. 3 (Andamans).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (Viti Islands).—Pöhl, Cat. Mus. Gödeffroy, No. 9, 1884, p. 27 (Viti).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Macassar, South Celebes; Ternate).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 522.—Weber, Semon's Zool. Forsch. Reis. Austral., vol. 5. 1895, p. 263 (New Guinea, Ambon).—Steindachner, Abh. Senckenberg. Ges., vol. 25, 1900, p. 418 (Batjan, Ternate).—Fowler. Copeia, No. 58, June 18, 1918, p. 64 (Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 280 (Calapan; Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 209 (Shortland Island; New Guinea); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 641 (Padang).

Scolopsis bilineata Martens, Preuss Exp. Ost Asien, 1876, p. 387 (Amboina).—Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 500 (Nafa, Okinawa).

Scolopsis bilineatum Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 84 (Bulan).

Lutjanus ellipticus Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 179, 213. Japan.

Scolopsides lineatus (not Quoy and Gaimard) Bleeker, Nat. Tijds. Nederland. Indië, vol. 5, 1852, p. 93 (Lawajong).

Scolopsis bleekeri Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 361 (on *Scolopsides lineatus* Bleeker).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (16)294, fig. 1.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 15 (Cebu).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 285 (Cebu).—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528 (Padang).

Perca frenata Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 357. No locality. (Name in text.)

Depth 2¾ to 3; head 3 to 3⅕, width 1⅞ to 2. Snout 3½ to 3⅔ in head from snout tip; eye 2½ to 3, greater than snout or interorbital; maxillary reaches to or little beyond front eye edge, but not to pupil with age, length 3¼ to 3½ in head; teeth minute, pointed, conic, in bands in jaws; palate and tongue toothless; interorbital 3½ to 4, slightly elevated, largely flattened above; preopercle edge rather irregularly with 25 serrae; small infraorbital spine directed forward; preorbital with several denticles, uppermost as rather large dagger like spine directed backward, along upper edge 2½ in eye. Gill rakers 3+5, short tubercles, ½ of gill filaments, which ¼ of eye.

Scales 40 to 43 in lateral line to caudal base and 2 to 4 more on latter; 4 scales above lateral line, 10 or 11 below, 24 or 25 predorsal forward opposite front nostril; cheek with 4 rows of scales to preopercle ridge and 2 or 3 more on flange. Suprascapula denticulate. Scales with 10 to 12 basal radiating striae; 129 to 140 apical denticles, with 1 or 2 transverse series of basal elements; circuli fine.

D. X, 9, I, fifth spine 2 to 2⅛ in total head length, first ray 2¼ to 2¾; A. III, 7, I, second spine 1⅔ to 1⅘, third ray 1⅔ to 3⅛; caudal 1 to 1⅛, forked; least depth of caudal peduncle 2⅗; pectoral 1 to 1⅛; ventral 1 to 1⅕.

Back brown, paler to whitish on sides and below. White line, usually broken as small spots, from above one hind nostril to opposite one. Whitish medial line from interorbital to spinous dorsal and another each side above eye up to front sides of back. Broad white band from infraorbital obliquely up till opposite soft dorsal origin on back, bordered each side its extent by dark line. Large diffuse blotch at bases of last dorsal rays on back. Iris pale yellowish white. Spinous dorsal whitish, terminally shaded with brownish. Soft dorsal light brown, anteriorly with broad dusky margin, which offset by pale line out to hind tip of soft fin. And with front half black, hind half white. Other fins all pale.

Andamans, East Indies, Philippines, Japan, Melanesia.

5688. Agojo Point, Catanduanes Island, Luzon. June 10, 1909. Length 152 mm.

6515. Alibijaban Island. March 6, 1909. Length 152 mm.

11202, 16005, 16006, 17701, 22105. Alimango Bay, Burias Island. March 5, 1909. Length 104 to 152 mm.

14778. Bagacay Bay, Escarpada Island. March 13, 1909. Length 160 mm.

23723. Biri Channel. June 1–2, 1909. Length 106 mm.

9287. Biri Channel. June 1, 1909. Length 130 mm.

17700. Busin Harbor, Burias Island. March 8, 1909. Length 141 mm.

18734. Butauanan Island, Luzon. June 13, 1909. Length 139 mm.

17139, 17140. Cabugan Grande Island. July 30, 1909. Length 131 to 170 mm.

9852. Cagayan de Jolo, Jolo Sea. January 8, 1909. Length 156 mm.

6297. Canadaraman Island. January 4, 1909. Length 148 mm.

10975. Canmahala Bay, Luzon. March 11, 1909. Length 144 mm.

20722. Capunuypugan Point, Generale Island. May 10, 1908. Length?

11848 to 11851. Caracaran Bay, Batan Island. June 8, 1909. Length 104 to 138 mm.

7144. Casogoran, Malhon Island. July 27, 1909. Length 181 mm.

15468. Galera Bay. June 9, 1908. Length 118 mm.

4630, 4631. Grande Island Reef. January 8, 1908. Length 139 to 163 mm.

13205. Jolo. March 7, 1908. Length 143 mm.

12974. Langao Point, Luzon. June 24, 1909. Length 113 mm.

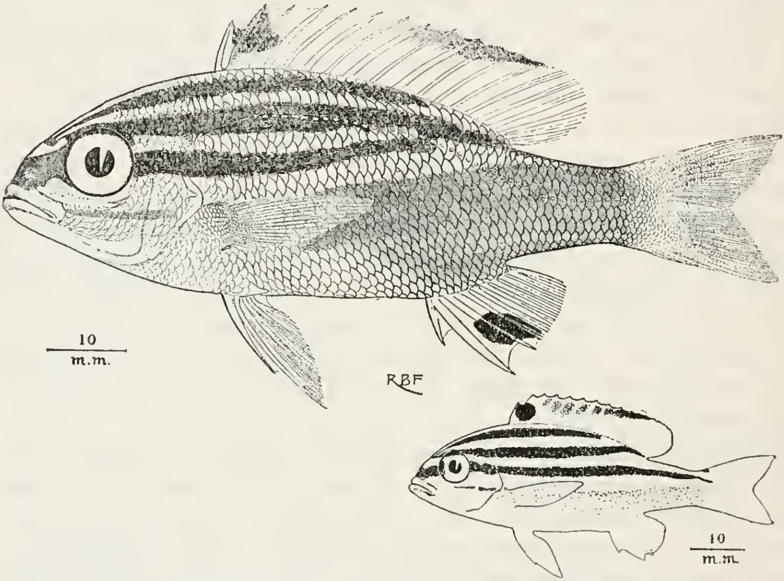

FIGURE 24.—SCOLOPSIS BILINEATUS (BLOCH). YOUNG EXAMPLES

4722, 9439 to 9441. Ligpo Point, Balayan Bay. January 18, 1908. Length 134 to 190 mm.

14815, 22234. Little Canta Cruz, Zamboanga. May 26, 1908. Length 121 to 173 mm.

14662, 14663. Lode Bay, Destacado Island. March 13, 1909. Length 153 to 177 mm.

14563. Maculabo Island. June 14, 1909. Length 125 mm.

11814. Matnog Bay, Luzon. May 31, 1909. Length 168 mm.

18375. Maricaban Island. January 20, 1908. Length 159 mm.

9306. 17637. Mompog Island. March 3, 1909. Length 144 to 165 mm.

15256, 6183. Near Palag Bay, Luzon. June 16, 1909. Length 107 to 161 mm.

12503. North west Verde Island. July 22, 1908. Length 160 mm.

12465, 15350. Pagapas Bay. February 20, 1909. Length 143 to 189 mm.

7027. Panabutan Bay, Mindanao. February 6, 1908. Length 168 mm.

21844. Pandanon Island. March 23, 1909. Length 150 mm.

15920. Pangasinan Island, Jolo. February 13, 1908. Length 121 mm.
11126. Pasacao, Ragay Gulf, Luzon. March 9, 1909. Length 155 mm.
12518. Polloc, Mindanao. May 22, 1908. Length 164 mm.
12050, 12051. Port Banalacan. February 23, 1909. Length 148 to 154 mm.
10484, 10724. Port Maricaban. July 21, 1908. Length 154 to 168 mm.
14764. Romblon. March 26, 1908. Length 119 mm.
16882. Sablayan, Mindoro. December 12, 1908. Length 167 mm.
15706 [289]. Sanguisiapo Island, Sulu. February 24, 1908. Length 156 mm. Upper surface lavender to olive, anteriorly washed with yellow; top of peduncle nearly orange; broad white stripe broadest at head where about width of pupil, running from corner of mouth to second dorsal ray, bordered by narrow stripes of light umber; from front of eyes narrow medial dorsal stripe running on either edge of dorsal sheath; below on top of head and shoulder short bright yellow line; line through top of eye not quite meeting its fellow on post-nasal region, passing backward to below middle of spinous dorsal; snout under line golden brown; white blotch under posterior part of dorsal reaching to lateral line; lower side and under surface white. Spinous dorsal cadmium, soft fin with reddish brown blotch covering anterior half; submarginal cloud of brownish red on posterior part, fin hyaline whitish near blotch. Caudal pale whitish hyaline, its edges vermilion; center of fin flushed with red. Anterior two-thirds of anal black, posterior rays hyaline, with whitish between. Ventral hyaline white, edged pinkish. Pectoral hyaline, edged with yellow; yellowish in axil, dark or brown stripe blotching upper edge of base. Iris dusky and yellow.
20022. Surigao Island. May 8, 1908. Length 111 mm.
9376. Taganak Island. January 7, 1909. Length 132 mm.
4899. Talajit Island, Buang Bay. March 15, 1909. Length 168 mm.
6510. Tara Island. December 14, 1908. Length 140 mm.
13461. Limbe Strait, Celebes, Dutch East Indies. November 9, 1909. Length 177 mm.
22197, 22198. Gomomo Island. December 3, 1909. Length 110 to 115 mm.
14738. Kayoa Island. November 29, 1908. Length 118 mm.
30605 U.S.N.M. New Guinea. Australian Museum. Length 168 to 170 mm. 2 examples.
56135 U.S.N.M. Bulan. Bureau of Fisheries (3875). Length 143 mm.
72010 U.S.N.M. Nafa, Okinawa, Riu Kiu. *Albatross* Collection 1906. Length 168 mm.

The following are all like Bleeker's figure of the young:

17635 [1196]. Mompog Island. March 3, 1909. Length 72 mm.
15949, 22199. Pangasinan Island, Jolo. February 13, 1908. Length 55 to 86 mm.
15732. Sanguisiapo Island. February 24, 1908. Length 70 mm.
18784. Tictauan Island, east of Zamboanga. September 8, 1909. Length 86 mm.
6170. Tonquil Island. September 14, 1909. Length 104 mm.
20872. Usada Island, Jolo. March 3, 1908. Length 93 mm.
48638 A.N.S.P. Philippines. Commercial Museum Philadelphia. Length 80 mm.
27616 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 158 mm. When fresh in arrack dark olive above, side lighter and below still paler. Broad white band with narrow black edges extends from maxillary and below eye backward and upward till opposite soft dorsal origin. On back below soft dorsal, from fourth ray, oblique whitish blotch. From upper eye edge along fore part of back 3 pale or narrow whitish streaks. Iris golden. Dorsal mostly white basally, spinous part grayish above and region

about last two spines, together with soft dorsal above, blackish brown, sloping off narrowly behind. Anal with spinous portion and front rays blackish brown, rest of fin white. Caudal pale olive, edges of lobes above and below slightly darker. Paired fins pale drab or grayish.

SCOLOPSIS TEMPORALIS (Cuvier)

Scolopsides temporalis Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 341. Waigiu, New Guinea, Vanicolo.—Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, Nov. 12, 1831, p. 197, pl. 26 (Offack Bay, Waigiu).

Scolopsis temporalis Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 360 (Louisiades, in 15 fathoms).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 12 (copied).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (North Celebes; Kordo, Mysore).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 122 (Ambon).—McCulloch, Proc. Linn. Soc. New South Wales, vol. 46, pt. 4, 1921, p. 469, pl. 40, fig. 3 (Palm Islands).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 210 (Shortland Island).

Depth 2⅗ to 2⅘; head 3⅛ to 3¼, width 2 to 2⅛. Snout 2⅓ to 2¾ in head; eye 3½ to 4⅓, 1⅗ to 1⅞ in snout, 1⅛ to 1⅓ in interorbital; maxillary reaches eye, expansion 2¼ to 3 in eye, length 2⅗ to 2⅘ in head; teeth in villiform bands in jaws, in about 7 irregular series; interorbital 3⅛ to 3¼, broadly convex; suborbital spine 2 to 2¼ in eye; hind preopercle edge with small, short, wide set denticles, 3 enlarged at angle. Gill rakers 5+5, short, low tubercles, ½ of gill filaments, which 3 in eye.

Scales 44 to 46 in lateral line to caudal base and 2 to 4 more on latter; 6 scales above lateral line, 11 or 12 below, 26 to 32 predorsal forward opposite front eye edge, 8 rows on cheek of which 2 on preopercle flange. Suprascapula with rough or crenulated edge but not serrated. Scales with 10 or 11 basal radiating striae and 1 to 3 incomplete auxiliaries; apical denticles 128 to 159, with 6 to 8 transverse series of basal elements; circuli fine.

D. X, 9, i, third spine 3 to 3⅖ in head, first ray 2¼ to 2⅖; A. III, 7, i, third spine 3⅔ to 3¾, first ray 2⅔ to 3; least depth of caudal peduncle 2⅔ to 2¾; pectoral 1¼ to 1⅓; ventral 1⅛ to 1⅕; caudal 1½ to 3 in combined head and body to caudal base, deeply emarginate, with age both lobes ending in long filaments of which upper longer.

Body dull olive above, becomes nearly naples yellow on sides and paler below. Iris yellowish brown. Across front of interorbital narrow buff band from one eye to other at front edge of squamous area; anteriorly another similar buff band extends forward over nostrils to middle of snout above and then continuous across on other side. Yellowish or gray line from lower front eye edge to lower front preorbital edge. On upper posterior edge of orbit gray ring about size of pupil. Fins all pale brown. Narrow dark brown bar or line transversely across pectoral base from fin origin.

East Indies, Melanesia, Queensland. I have seen this species previously only once, and that in the Bishop Museum where there is an example 350 mm. long from Shortland Island. The coloration of the species is very diagnostic, especially the gray or buff lines on the snout and the gray ring at the upper hind edge of the eye. Young examples do not have caudal filaments. Most all show a dark diffuse shade on the flanks above the median or axial line as in *Scolopsis bimaculatus*, though the dark brown transverse bar or narrow wedge across the pectoral base is ever present.

5232. Canmahala Bay, Luzon. March 11, 1909. Length 234 mm.

5500, 7588. Catbalogan, Samar. April 14, 1908. Length 205 to 250 mm. Pale green above, grading to silvery below, scales with narrow olive border; about 4 narrow stripes above lateral line of yellowish brown; 2 or 3 supplementary ones on nape; short bronze stripe slightly less than eye in width under lateral line, continued forward to under eye as an irregular brownish line disappearing on caudal peduncle; short oblique lines of pale yellow below pointing forward and downward, horizontal on lower peduncle; blue spot behind eye and near angle of opercle; another blotch below brown line on cheek and opercle; interspaces between oblique yellow lines bluish above; orange brown crescent in front of interorbital, rest of scaleless portion of top of head smoky purple; preorbitals pearly, inside of mouth pinkish; toothed margin of preopercle orange; lower head more or less dusky. Dorsal hyaline purple, tips of membranes of hinder portion and base yellow; blotches of yellow on body of fin posteriorly. Caudal orange, tipped with smoky blue in fork, edge of lower lobe same. Anal hyaline whitish washed with straw through center. Ventral hyaline, with dash of orange on first membrane. Pectoral pale straw, dusky above, with blackish basal bar. Iris bright orange and dusky.

6719. Catbalogan. April 16, 1908. Length 210 mm.

6192. Mansalay, Mindoro. June 4, 1908. Length 320 mm.

6244. Varadero Bay, Luzon. July 23, 1908. Length 200 mm.

6792. Danawan Island and Si Amil Island, Borneo. September 26, 1909. Length 208 mm.

A947. Dodepo and Pasejogo Islands, Gulf of Tomini, Celebes, Dutch East Indies. November 16, 1909. Length 275 mm.

A891. Limbe Strait, Celebes. November 10, 1909. Length 437 mm. Olive gray, silvery white below, ochery interocular bar about ⅓ diameter of pupil, similar bar bending forward about half way to snout, blue below equal to the ochery; narrow blue line diagonally across preorbital; blotches of blue above and behind eye; stripe across upper opercle and cheek and dashes in front and behind hinder limb of preopercle, naked part of which yellowish; obscure bronzy stripe behind lower part of eye passing downward into middle of side, scales of middle of side under lateral line with bluish round spot near centers; dorsal hyaline purplish, clouded with olive yellow across spine, margin the same, bases of soft membranes bluish; upper half of caudal yellowish.

A1219. Gomomo Island, Pitt Passage. December 3, 1909. Length 247 mm.

A1356. Great Tobea Island. December 15, 1909. Length 310 mm.

A1572. Soo Wan, East Formosa. January 29, 1910. Length 293 mm.

SCOLOPSIS VOSMERI (Bloch)

Anthias vosmeri Bloch, Naturg. Ausländ. Fische, vol. 6, 1792, p. 120, pl. 321. Japan Sea.

Anthias vosmaeri Forster, Fauna Indica, 1795, p. 16.

Anthias vosmari Schneider, Syst. Ichth. Bloch, 1801, p. 304 (Tranquebar).

Lutjanus vosmaeri Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 179, 213 (Japan).

Sparus vosmerianus Shaw and Nodder, Naturalists' Miscellany, vol. 22, 1810, pl. 939 (Indian Seas).

Scolopsides vosmeri Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 333 (Java, Japan, Sumatra).—Pellegrin, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).

Scolopsis vosmeri Day, Fishes of India, pt. 1, 1875, p. 87, pl. 23, figs. 1–3.—Klunzinger, Fische Roth. Meer., 1884, p. 33.—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Tuticorin and Panban).—Jordan and Evermann, Proc. U. S. Nat. Mus., vol. 25, 1903, p. 349 (Keerun, Formosa).—Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 22 (Cavite).—Jordan and Richardson, Mem. Carnegie Mus., vol. 4, No. 4, 1909, p. 188 (Takao).—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 11 (Oman).—Seale, Philippine Journ. Sci., vol. 9, No. 1, 1914, p. 66 (Hong Kong).—Pearson, Ceylon Administr. Rep., 1914, pt. 4, p. E6 (Gulf of Manaar).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 451 (Ceylon).—Pearson, Ceylon Administr. Report, 1925, p. F14; 1926, pp. F26, F28.—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 280 (Orion, Philippines).—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Scolopsis vosmaeri Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (6) 339, fig. 5 (Sumatra, Pinang, Singapore, Banka, Duizend Islands, Java, Celebes, Sumbawa).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 282 (Macassar).

Anthias japonicus Bloch, Naturg, Ausländ. Fische, vol. 7, 1793, p. 5, pl. 325, fig. 2. No locality.—Forster, Fauna Indica, 1795, p. 16.—Schneider, Syst. Ichth. Bloch, 1801, p. 307 (Japan).

Lutjanus japonicus Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 180, 213 (Japan).

Scolopsis japonicus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 354 (China, Ceylon).—Day, Fishes of Malabar, 1865, p. 25; Proc. Zool. Soc. London, 1865, p. 14 (Cochin. Malabar).—Playfair, Fishes of Zanzibar, 1866, p. 29 (Aden).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 740 (Koseir, Red Sea).

Perca aurata Park, Trans. Linn. Soc. London, vol. 3, 1797, p. 35. Sumatra.

Lutianus auratus Schneider, Syst. Ichth. Bloch, 1801, p. 328 (Sumatra).

Scolopsis aurata Cantor, Journ. Asiat. Soc. Bengal, vol. 18, No. 2, 1849, p. 1063 (Pinang).

Scolopsis auratus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 356 (copied).—Boulenger, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).

Scolopsides auratus Bleeker, Nederland. Tijdschr. Dierk., vol. 4, 1874, p. (117) 150 (China).

Pomacentrus enneadactylus Lacépède, Hist. Nat. Poiss., vol. 5, 1802, pp. 505, 508. No locality.

Scolopsis kurite Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 9, pl. 2, fig. 3. Massauah.

Scolopsides kurita Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 331. (On *Kurite* Russell, Fishes of Coromandel, vol. 2, 1803, p. 5, pl. 106. Vizagapatam.)

Scolopsides kate Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 329. Pondicherry.

Scolopsides rupellii Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 332. Massauah, Red Sea.

Scolopsis argyrosomus (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 333. Java. (Name in synonymy.)

Scolopsides torquatus Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 335. Batavia.—Bleeker, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 31 (Manila Bay); Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (40) 318, fig. 1.

Scolopsis torquatus Günther, Cat. Fish. Brit. Mus.., vol. 1, 1859, p. 356 (Moluccas, India).—Kner, Reise Novara, Fische, 1865, p. 59 (Hong Kong).—Playfair, Fishes of Zanzibar, 1866, p. 30 (Zanzibar).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 8 (Sumatra, Java, Celebes).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 154 (Singapore; Canton, China).

Scolopsides collaris Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 356. Moluccas. (Name in text.)

Depth 2⅕ to 2⅖; head 3 to 3⅛, width 1⅘ to $1\frac{9}{10}$. Snout 3 to 3⅓ in head; eye 2¾ to 3, greater than snout or interorbital in young, subequal with age; maxillary reaches eye, length $2\frac{9}{10}$ to 3 in head; lips fleshy; narrow bands of fine teeth in jaws, palate edentulous; interorbital 3⅛ to 3¼, slightly convex; infraorbital spine 4½ in eye; hind preopercle edge denticulate. Gill rakers 5+6, short, broad points, lower tuberculate, all greatly less than gill filaments, which 2½ in eye.

Scales 38 in lateral line to caudal base and 3 more on latter; 5 scales above lateral line, 9 below, 26 predorsal forward little before front nostril, 6 rows on cheek to preopercle ridge. Scales with 9 basal radiating striae; apical denticles 81 to 103, with 5 to 7 transverse series of basal elements; circuli fine.

D. X, 9, I, fourth spine 2 to 2⅕ in head, first ray 2⅓ to 2⅖; A. III, 7, I, second spine 2 to 2¼, first ray 2⅕ to 2⅓; caudal 1⅙ to 1⅕, emarginate, upper lobe little longer; least depth of caudal peduncle 2⅗; pectoral 1¼; ventral 1¼ to 1⅓.

Brown above, sides and lower surface pale. Whitish transverse band sometimes from side of occiput down over opercle and most of space before pectoral base. Iris whitish. Sometimes pale or whitish medial lateral band on costal region horizontally. Upper hind edge of gill cover and humeral scale dusky brown. Chin whitish. Inside pharynx orange red. Vertical fins brown, lower fins whitish. Neutral dusky spot, greatly less than pupil at upper pectoral base.

Arabia, Zanzibar, Pinang, India, Ceylon, East Indies. Tonkin, Philippines, China, Formosa, Japan. The nominal *Scolopsides torquatus* Cuvier seems to differ only in coloration, lacking the pale gray or whitish horizontal band on the costal region. This, however, is not often evident in preserved examples.

5113, 5114. Sandakan market, Borneo. March 4, 1908. Length 196 to 198 mm.
13239, 13240. Makassar market. December 24, 1909. Length 196 mm.

The following are all the *torquatus* form:

11523. Cebu market. August 26, 1909. Length 173 mm.

4828, 4831. Jolo market. February 11, 1908. Length 168 to 195 mm.

11841. Manila market. April 24, 1909. Length 145 mm.

14234. Mariveles wharf. January 30, 1909. Length 138 mm. [1105.] General color pearly, reds more pronounced at first, rapidly fading after death; edges of scales more or less dusky; dark brown flap of opercle and upper base of pectoral; vertical fins reddish orange; dorsal somewhat dusky at base; ventral pale orange; pectoral hyaline orange.

56278. U.S.N.M. Cavite. Stanford University. Length 45 to 55 mm. 2 examples.

Ctenoscolopsis, new subgenus[21]

Type.—*Holocentrus ciliatus* Lacépède.

Diagnosis.—Maxillary with row of close set external denticles. Silvery streak along back close to dorsal bases.

SCOLOPSIS CILIATUS (Lacépède)

Holocentrus ciliatus Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 333, 367. No locality.

Scolopsis ciliatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 355 (Amboina).—Day, Proc. Zool. Soc. London, 1870, p. 683 (Andamans); Fishes of India, pt. 1, 1875, p. 89, pl. 23, fig. 5.—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 6 (Sumatra, Batu, Nias, Singapore, Java, Bawean, Celebes, Sumbawa, Halmahera, Ternate, Batjan, Obi Major, Buru, Amboina, New Guinea).—Peters, Monatsb. Akad. Wiss. Berlin, 1876 (1877), p. 832 (Amboina).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 15 (Cebu).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 285 (Manila; Cebu).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 525.—Steindachner, Abh. Senckenberg. Ges., vol. 25, 1900, p. 418 (Ternate).—Jordan and Seale, Proc. U. S. Nat. Mus., vol. 28, 1905, p. 781 (Negros).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 122 (Macassar).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 280 (Ternate; Kawa, West Ceram; Saleyer; Banda; Tuir Island; Oobo, Aru Islands; Pepela Bay, Rotti).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 280 (Bacon); Mem. Bishop Mus., vol. 10, 1928, p. 209 (New Guinea).—Tirant, Service Océanogr. Pêches Indo Chine, 6^e^ Note, 1929, p. 168 (Phu-Yen).

Scolopsis ciliatu Martens, Preuss. Exp. Ost Asien, 1876, p. 387 (Amboina) (error).

Scolopsis ciliata Jordan and Seale, Proc. U. S. Nat. Mus., vol. 28, 1905, p. 781 (Negros); Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 23 (Manila).

Scolopsides ciliatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (38) 316, fig. 2.

Scolopsides lycogenis Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 346, pl. 127. Java; New Guinea; Vanicolo.

Lycogenis argyrosoma (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 346. Java. (Name in synonymy.)

Scolopsides lerol Thiollière, Fauna Woodlark, 1857, p. 159. Woodlark Island.

---

[21] Κτεισ, comb; *Scolopsis;* with reference to the maxillary denticles.

Scolopsis luzonia Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 22, fig. 1. Cavite.—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 85 (Bacon; San Fabian).

Depth $2\frac{4}{5}$ to $2\frac{7}{8}$; head $3\frac{1}{4}$ to $3\frac{1}{3}$, width $1\frac{4}{5}$ to 2. Snout $3\frac{1}{6}$ to $3\frac{1}{2}$ in head; eye $2\frac{1}{2}$ to $2\frac{3}{5}$, greater than snout or interorbital to equal to interorbital with age; maxillary reaches opposite eye, with row of 8 to 11 close set serrae along upper edge, expansion $4\frac{3}{4}$ to 5 in eye, length $3\frac{1}{5}$ to $3\frac{1}{3}$ in head; narrow band of fine teeth in each jaw; interorbital 3 to $3\frac{1}{5}$, slightly convex; infraorbital spine $3\frac{3}{4}$ to $4\frac{1}{2}$ in eye; hind preopercle edge with 24 serrae. Gill rakers 4+5, low, broad tubercles, greatly less than gill filaments, which $\frac{1}{3}$ of eye.

Scales 39 or 40 in lateral line to caudal base and 1 to 3 more on latter; 4 scales above lateral line, 9 to 10 below, 29 to 33 predorsal forward half way in space from snout tip to front nostril, 4 rows of scales on cheek to preopercle ridge and 2 more on preopercle flange. Suprascapula serrate. Scales with 9 to 11 basal radiating striae; apical denticles 104 to 130, with 1 or 2 transverse series of basal elements; circuli fine.

D. X, 9, I, third spine $2\frac{1}{10}$ in head, sixth ray $1\frac{4}{5}$ to 2; A. III, 7, I, third spine $2\frac{1}{10}$ to $2\frac{1}{5}$, first ray $1\frac{7}{8}$ to $2\frac{1}{5}$; caudal 1, well forked; least depth of caudal peduncle $2\frac{2}{5}$ to $2\frac{1}{2}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{4}$; ventral $1\frac{1}{8}$ to $1\frac{1}{5}$.

Brown, nearly uniform and but little paler on under surface. Usually yellowish white streak on back close along bases of dorsal spines, tapering at either end and expanded medially. Iris grayish. Fins all brownish.

India, Andamans, East Indies, Philippines, Melanesia. *Scolopsis luzonia* Jordan and Seale is clearly a synonym, representing simply the variably uniform variety, or the whitish longitudinal band of the upper back faded. *Scolopsis elongatus* Weber[22] is based on an example but 55 mm. long, surely a still younger stage than most of my smallest specimens.

19366. Beach near Ulugan Bay, Palawan. December 29, 1908. Length 77 mm.

9409 to 9411. Busin Harbor, Burias Island. April 23, 1908. Length 127 to 147 mm. Two larger examples malformed or with concave predorsal region.

17183, 18721, 22287. Butauanan Island, Luzon. June 13, 1909. Length 147 to 180 mm.

11185, 17474 [1327]. Canmahala Bay, Luzon. March 11, 1909. Length 95 to 157 mm. First white line shows distinctly, reaching from shoulder region to last dorsal spine; second stripe much broader, continuing slightly on upper peduncle; bright lemon yellow spots through middle of side.

12736. Capulaan Bay, Pagbilao. February 24, 1909. Length 143 mm.

21052 to 21054. Capunuypugan Point, Generale Island. May 9, 1908. Length 130 to 140 mm.

---

[22] Siboga Exp., vol. Fische, 1913, p. 281, fig. 67. Elat, High Key.

6717, 6718, 6814 to 6817, 7595, 15888, 15889. Catbalogan, Samar. April 14, 1908. Length 136 to 198 mm.

13014, 13015. Catbalogan. April 15, 1908. Length 150 to 197 mm. Color rich bay brown, with pale golden-yellow stripes, one under eye purple blue on snout; below white, with yellow shade above.

5811, 6716 to 6718, 6816, 6934, 14446. Catbalogan. April 16, 1908. Length 138 to 185 mm. One with right infraorbital spine inverted and points forward.

11722. Cotabato market. May 20, 1908. Length 155 mm.

9363. Langao Point, Luzon. June 24, 1909. Length 178 mm.

7030, 7032. Limbones Cove, Luzon. January 14, 1908. Length 151 to 179 mm.

11362, 19203, 19205, 19206. Maagnas, Lagonoy Gulf, Luzon. June 17, 1909. Length 140 to 184 mm.

17174. Malapascua Island. November 23, 1908. Length 161 mm.

21170, 22569. Malcochin Harbor. December 19, 1908. Length 61 to 73 mm.

17684. Murcielagos Bay. August 9, 1909. Length 142 mm.

5811, 12025, 12027. Nabatas Point, Luzon. July 24, 1909. Length 138 to 170 mm.

20295. Near Palag Bay, Luzon. June 16, 1909. Length 124 mm.

15349. Pagapas Bay, Luzon. February 20, 1909. Length 173 mm.

11282, 11283. Pandanon Island. March 23, 1909. Length 150 to 151 mm.

19481, 19482. Pangauron River, Port Caltom, Busuanga Island. December 16, 1908. Length 82 to 136 mm.

10636, 10637, 10738, 12514, 12516, 12517, 13137, 13138. Polloc, Mindanao. May 22, 1908. Length 111 to 166 mm.

Five examples. Port Caltom, Busuanga Island. December, 1908. Length 55 to 68 mm.

8449, 12964, 18703, 20593. Port Jamelo, Luzon. July 13, 1908. Length 125 to 148 mm.

18628. Saboon Island. March 10, 1909. Length 135 mm.

17603. San Miguel Island. June 4, 1909. Length 167 mm.

12227. Santa Cruz Island. April 24, 1908. Length 152 mm.

20886, 20887. Santiago River, Pagapas Bay, Luzon. February 20, 1909. Length 83 to 97 mm.

Three examples. Subig Bay, Luzon. January 7, 1908. Length 42 to 68 mm. Very small one with 2 white longitudinal lines; one from over eyes to bases of front dorsal rays; lower one broader, from lower hind eye edge and back over caudal peduncle to bases of supramedian caudal rays.

21235, 22891. Surigao. May 8, 1908. Length 87 to 95 mm.

9379 [1065], 19438. Taganak Island. January 7, 1909. Length 134 to 147 mm. White bar from about sixth dorsal spine midway between dorsal and lateral line to base of third soft ray; middle of side with bright sulphur yellow spots at base of scales; yellowish about eye; fins reddish terminally.

Three examples. Tilig, Lubang Island. July 14, 1908. Length 61 to 79 mm.

18880. Tilig. July 15, 1908. Length 151 mm.

19365. Ulugan Bay, Palawan. December 29, 1908. Length 89 mm.

19986 U.S.N.M. Mauritius. Colonel Nicholas Pike. Length 187 mm.

30637 U.S.N.M. New Guinea. Sir William Macleay. Length 133 mm.

51991 U.S.N.M. Negros. Dr. B. Dean. Length 100 mm.

56211 U.S.N.M. Bacon. Bureau of Fisheries (3730). Length 114 mm. As *Scolopsis luzonia.*

56265 U.S.N.M. Bacon. Bureau of Fisheries (3731). Length 132 mm. As *Scolopsis luzonia.*

Genus POMADASYS Lacépède

Pomadasys Lacépède, Hist. Nat. Poiss., vol. 4, 1803, p. 515. Type *Sciaena argentea* Forskål, monotypic.

Pomadasis Cuvier, Règne Animal, vol. 2, 1817, p. 345. Type *Sciaena argentea* Forskål.

Pristipom Oken, Isis, 1817, p. 1782. On *Les Pristipomes* Cuvier, Règne Animal, vol. 2, 1817, p. 279. Type *Lutjanus hasta* Bloch, monotypic.

Pristipoma Quoy and Gaimard, Voy. Uranie, Zool., Dec. 18, 1824, p. 320. Type *Lutjanus hasta* Bloch.

Anomalodon Bowdich, Excurs. Madeira, 1825, p. 237. Type *Anomalodon incisus* Bowdich, monotypic.

Polotus Blyth, Proc. Asiat. Soc. Bengal, vol. 27, 1858, p. 283. Type *Polotus nitidus* Blyth=*Lutjanus hasta* Bloch, monotypic.

Rhonciscus Jordan and Evermann, Rep. U. S. Fish Comm., pt. 21, 1895(1896), p. 387. Type *Pristipoma crocro* Cuvier, designated by Jordan, Genera of Fishes, pt. 4, 1920, p. 472.

Rhencus Jordan and Evermann, Rep. U. S. Fish Comm., pt. 21, 1895(1896), p. 387. Type *Pristipoma panamense* Steindachner, monotypic.

Dacymba Jordan and Hubbs, Ann. Carnegie Mus., vol. 11, 1917, p. 464. Type *Pristipoma bennettii* Lowe, monotypic.

Body oblong, compressed. Head compressed, variably obtuse to little pointed. Eyes moderate. Mouth small or moderate, horizontal, cleft rather short. Jaws subequal, upper little protractile. Maxillary slips below preorbital. Lips moderate. Teeth in jaws in bands, villiform, pointed, without canines, none on palate. Lower jaw with median, deep longitudinal groove and 2 small, open pores under skin. No barbels. Preopercle serrated. Suborbitals entire. No opercular spine. Pseudobranchiae large. Branchiostegals 6 or 7. Air bladder simple. Pyloric appendages few. Scales large or moderate, 40 to 80 in lateral series, ctenoid on body. Head scaled above and on sides, jaws scaly. Dorsal and anal bases scaly. Lateral line continuous. Dorsals continuous, depressible in groove, spines 11 to 15, rays 12 to 18. Anal spines 3, rays 7 to 13. Pectoral pointed.

Species few, living in tropical and subtropical seas, few sometimes in fresh water. *Pristipoma nigrorubrum* Kent[23] and *P. variegatum* Kent[23] are two nominal forms never described and therefore not recognizable. *Pristipoma rostratum* (Rapp) Steindachner[24] is not included by Barnard in his Monograph of the Marine Fishes of South Africa. It is incompletely described: Depth 3; head 2⅔. Snout 4⅘ in head; eye over 3⅔, greater than snout or interorbital; teeth villiform, closely crowded, upper better developed. Scales 52 in lateral line to caudal base and 13 more on latter, 10 scales above. Snout, preorbital and lips scaleless. Dorsal spines strong, fourth 2 in head, last spine equals eye, first ray 2½ in head. Caudal deeply lunate, equals head without snout. Pectoral nearly eye diameter shorter than head. Yellowish white and somewhat deeper yellow on fins. Length 140 mm.

---

[23] Great Barrier Reff, 1893, p. 369. Queensland.

[24] Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 119. Cape of Good Hope.

ANALYSIS OF SPECIES

a^1. POMADASYINA, new subgenus. Trunk without dark spots or bands; two last dorsal spines usually subequal.

b^1. Scales 40 to 50; 4 or 5 scales above lateral line; A. III, 7.

c^1. Eye 2⅔ to 3.

d^1. Second anal spine twice eye; spinous dorsal with large black spot; no opercular blotch ---------- **therapon.**

d^2. Second anal spine much less than twice eye; no dorsal blotch; opercle with olive or blue blotch ---------- **grunniens.**

c^2. Eye 3½ to 4; second anal spine double or more than eye; dorsal and opercle immaculate ---------- **guoraca.**

b^2. Scales 55 to 65; 9 scales above lateral line; A. III, 12; head purplish; opercle with black blotch; ventral blackish sub-terminally and other fins stained blackish ---------- **olivaceus.**

a^2. Trunk with dark spots or bands.

e^1. POMADASYS. Body with dark spots and when small sometimes as transverse series or as longitudinal rows.

f^1. Back uniform, or with few dark spots; black spot on opercle. **incisus.**

f^2. Back with 4 or 5 large brown or blackish blotches; large dark blotch on spinous dorsal ---------- **maculatus.**

f^3. Back with small black spots above, sometimes one to each scale.

g^1. Five scales above lateral line ---------- **argenteus.**

g^2. Six scales above lateral line ---------- **manadensis.**

g^3. Seven or 8 scales above lateral line.

h^1. A black opercular spot.

i^1. Five or 6 interrupted dark vertical bars; dorsals with black spots ---------- **hasta.**

i^2. With longitudinal rows of dark spots; dark spot at base of each dorsal spine and ray; edges of soft vertical fins blackish ---------- **opercularis.**

h^2. No black opercular spot; head, body, and dorsals with small dark spots, on body dark spot at base of each scale. **multimaculatus.**

e^2. RHONCISCUS. Body with dark longitudinal bands.

j^1. Three dark longitudinal bands, lowest from eye to caudal.

k^1. Scales 58 to 62, 12 above lateral line; A. III, 6 or 7. **striatus.**

k^2. Scales 70 to 80, 10 above; A. III, 8 ---------- **stridens.**

j^2. Six to 11 longitudinal golden or dark bands; scales 50 to 60, 7 or 8 above; A. III, 7 to 10 ---------- **furcatus.**

POMADASYINA, new subgenus

Type.—*Anthias grunniens* Schneider.

Diagnosis.—Body uniform, without dark spots or bands. Dorsal spines usually subequal.

POMADASYS THERAPON (Bleeker)

Pristipoma therapon Bleeker, Nat. Tijds. Nederland. Indië, vol. 1, 1850, p. 100. Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 293 (copied).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-1877, pl. (63) 341, fig. 1.—Seale, Philippine Journ. Sci., vol. 5, No. 4, Oct. 1910, p. 276 (Sandakan, Borneo).

Pomadasys therapon Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 29 (Java, Banka, Celebes).

Depth 2⅘; head 2⅘. Snout 3¼ in head; eye 3¼, subequal with snout, greater than interorbital; maxillary reaches ¼ in eye, length 3 in head; outer row of teeth little enlarged; interorbital slightly convex; preopercle edge denticulate. Scales 43 in lateral line, 6 above, 10 below, extends forward to snout, 10 rows on cheek.

D. XI or XII, 13 or 14, fourth spine 1⅔ in head, first ray 2; A. III, 7 or 8, second spine 2⅒, first day 2½; caudal 1⅓, emarginate; least depth of caudal peduncle 2⅗; pectoral 1⅛; ventral 1⅖. Above gray or caerulean green, below silvery. Iris yellow. Fins yellowish, large dusky blotch on spinous dorsal from third to sixth membranes medially. Length 114 mm. (Bleeker.)

East Indies.

POMADASYS GRUNNIENS (Schneider)

Anthias grunniens Schneider, Syst. Ichth. Bloch, 1801, p. 308. Tanna Island, Society Group.

Perca grunniens (Forster) Schneider, Syst. Ichth. Bloch, 1801, p. 308 (name in synonymy).—Lichtenstein, Descript. Animal., 1844, p. 294.

Pomadasis grunniens Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 208 (compiled).

Pristipoma unicolor (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 256. Batavia. (Name in text.)

Pristipoma argyreum Valenciennes, Hist. Nat. Poiss., vol. 9, 1833, p. 485. Coromandel coast; Sumatra; Mauritius; Batavia.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 292 (compiled).—Day, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (42) 320, fig. 4.—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Manila Bay).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 277 (Buka or Cyrus Bay, Rotti).

Pomadasys argyreus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-1877, p. 30 (Sumatra, Nias, Java, Borneo).

Pomadasis argyreus Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 259 (Manila).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3-4, 1917, p. 450 (Ceylon).

Pristipoma guoraka (not Cuvier) Day, Fishes of India, pt. 1, 1875, p. 20, fig. 1 (part).

Depth 2¾ to 2⅞; head 2⅘ to 3, width 2 to 2⅛. Snout 3⅛ to 3½ in head; eye 3½ to 4¼, 1 to 1⅕ in snout with age and greater than snout in young, greater than interorbital in young to subequal with age; maxillary reaches ⅕ in eye, length 3 in head; teeth fine, simple, conic, in 3 or 4 irregular rows and an outer enlarged row; interorbital 4 to 4⅛, widely convex; preopercle edge apparently entire, denticles obscure and covered with membrane. Gill rakers 7+14, lanceolate, short, 1¾ in gill filaments, which 1⅔ in eye.

Scales 40 to 44 in lateral line to caudal base and 5 to 7 more on latter; 6 scales above lateral line, 11 to 13 below, 25 predorsal of which 15 to 17 to occiput, 9 to 12 rows on cheek. Suprascapula entire. Basal scaly sheath to both dorsals and anals. Scales with 7 to 10 basal radiating striae; circuli very fine.

D. XII, 13, I, third spine 1½ to 1⅘ in head, third ray 2⅕ to 2⅖; A. III, 7, I, second spine 2 to 2⅛, first ray 2¼ to 2½; caudal 1½ to 1¾, slightly round in young to more so as expanded, hind edge slightly concave to nearly truncate as expanded with age; pectoral 1⅒ to 1⅕; ventral 1⅖ to 1⅗.

Back pale brown, sides and below whitish, everywhere with silvery white tints and reflections. Iris yellowish white. Young with neutral dusky blotch nearly size of eye on opercle above. Fins all pale brown.

Mauritius, India, Ceylon, Andamans, Singapore, East Indies, Philippines, Polynesia. I have used *Anthias grunniens* Schneider as the earliest name for this species as it is described with "rostrum breve, obtusum" and the eye large. It is therefore the present species, though wrongly identified by Bleeker with *Pristipoma guoraca* Cuvier.

Seventeen examples [D. 5461]. Caringo Island, N. 12° W., 4.9 miles (13° 57′ 42″ N., 123° 06′ 42″ E.), Luzon. June 14, 1909. Length 78 to 140 mm.

2646 [D. 5361]. Corregidor Light, S. 89° W., 7.2 miles (14° 24′ 15″ N., 120° 41′ 30″ E.), Manila Bay. February 9, 1909. Length 104 mm.

11440. Manila market. December 12–18, 1907. Length 95 mm.

8577 [D. 5442]. San Fernando Point Light, N. 39° E., 8.4 miles (16° 30′ 36″ N., 120° 11′ 06″ E.), Luzon. May 11, 1909. Length 190 mm.

A, 1013. Buka Buka Island, Gulf of Tomini, Celebes, Dutch East Indies. November 20, 1909. Length 105 mm.

POMADASYS GUORACA (Cuvier)

Pristipoma guoraca Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 256 (on *Guoraca* Russell, Fishes of Coromandel, vol. 2, 1803, p. 24, pl. 132, Vizagapatam).—Valenciennes, Voy. Ind. Orient. Zool. Bélanger, 1834, p. 363 (Malabar; Mahé).—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1055 (Pinang).—Kner, Reise Novara, Fische, 1865, p. 53 (Madras).—Day, Fishes of Malabar, 1865, p. 22 (copied); Fishes of India, pt. 1, 1875, p. 75 (not pl. 20, fig. 1); Fauna Brit. India, Fishes, vol. 1, 1889, p. 512.—Malpas, Ceylon Administr. Report, 1921, p. E5.—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, February 15, 1929, p. 367 (Travancore).

Pristipoma guaraca Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (45) 323, fig. 1.

Pomadasys guoraca Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 30 (Sumatra, Pinang, Java, Celebes, Amboina).

Pomadasis guoraka FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 232 (Delagoa Bay); 1927, p. 279 (Orani, Philippines).

Pomadasys guoraka BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 678 (Delagoa Bay).

Depth 2⅖ to 2⅔; head 2⅘ to 2⅞, width 1$\frac{9}{10}$ to 2⅞. Snout 2⅞ to 3 in head; eye 4⅓ to 4⅞, 1½ in snout, 1 to 1⅛ in interorbital; maxillary reaches eye, largely concealed, expansion 2 in eye, length 3 to 3¼ in head; lips narrow, coriaceous; teeth moderate, conic, in bands in jaws, in about 4 irregular series, with outer row enlarged; interorbital 4⅕, broadly convex; preopercle edge with rather few feeble denticles. Gill rakers 6+15, lanceolate, ½ of gill filaments or 3½ in eye.

Scales 43 to 45 in lateral line to caudal base and 6 to 8 more on latter; 6 scales above lateral line, 11 below, 25 to 28 predorsal extending forward above nostrils, 13 rows on cheek. Suprascapula entire. Scales with 9 or 10 basal radiating striae; circuli very fine.

D. XII, 13, I, third spine 1⅞ in head, first ray 2⅗ to 2⅘; A. III, 7, I, second spine 1¾ to 1⅞, first ray 2 to 2⅓; caudal 1⅗ to 1¾, truncate, rounded as expanded; least depth of caudal peduncle 3⅕ to 3⅓; pectoral 1 to 1⅒; ventral 1¼ to 1⅖.

Back pale brown, shading paler on sides to whitish below and everywhere with silvery reflections. Iris dull brown. Fins all dull brown. Dorsal spines burnished with silvery white.

Portuguese East Africa, Seychelles, India, Pinang, East Indies, Philippines. The synonymy as left by Day was involved. *Anthias grunniens* Schneider evidently does not belong here or *Pristipoma argyreum* Valenciennes for that matter. Surely Russell's *Perca guoraka* is *Pristipoma guoraka* Cuvier and as such figured in Bleeker's Atlas.

22538 Dagupan, Luzon. March 18, 1908. Length 73 to 88 mm. 3 examples.
5269, 5270. Dagupan, Luzon. March 19, 1908. Length 188 to 201 mm.
10559 to 10565. San Fernando Point Light, N. 39° E., 8.4 miles (16° 30′ 36″ N., 120° 11′ 06″ E.), Luzon. May 11, 1909. Length 151 to 172 mm.
6919, 6920. Tacloban market. July 25, 1909. Length 125 to 127 mm.
11831. Sandakan market, Borneo. March 2, 1908. Length 105 mm.
Ten examples. A.N.S.P. Orion, Batan. April 28, 1923. Length 88 to 106 mm.

POMADASYS OLIVACEUS (Day)

Pristipoma olivaceum DAY, Fishes of India, pt. 1, 1875, p. 73, pl. 19, fig. 1. Coasts of Beloochistlan and Sind; Fauna British India, Fishes, vol. 1, 1889, p. 509, fig. 154.—PELLEGRIN, Bull. Soc. Zool. France, vol. 39, 1914, p. 225 (Fort Dauphin, Madagascar).—PEARSON, Ceylon Administr. Report, 1915–18, p. F12.

Pomadasys violaceus STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71 pt. 1, 1907, p. 131 (Gischin, South Arabia).

Depth 2⅗; head 3. Snout 3 in head; eye 3⅘, 1⅕ in snout, 1¼ in interorbital; maxillary reaches hind nostril or to eye, length 3⅔ in head; teeth in villiform bands in jaws, outer row largest; interorbital moderately convex; preopercle serrated. Scales 66 along above lateral line, 54 along below lateral line; tubular scales 55 in lateral line; 9 scales above lateral line, 15 below (figure shows 10 to anal origin); predorsal scales forward to nostrils. D. XII, 15, third spine 2 in head, first ray 3; A. III, 12, second spine 2⅖, first ray 2¾; caudal 1¼, deeply emarginate; least depth of caudal peduncle 2⅖; pectoral 1⅛; ventral 1⅗. Olive gray, head glossed with purple. Large black blotch, bordered yellow in front at upper angle of opercle. Eyes golden. Pectoral yellow. Ventral yellow over basal half, terminally black with white edge. Other fins stained blackish with fine deep brown dots. Reaches 305 mm. (Day.)

Arabia, Madagascar, India.

Subgenus POMADASYS Lacépède

Body with dark spots and when small some times as transverse series or as longitudinal rows.

POMADASYS INCISUS (Bowdich)

Anomalodon incisus Bowdich, Excurs. Madeira, 1825, p. 237, fig. 51. Gambia, West Africa.

Pristipoma rogerii Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 254. Senegal.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 298 (copied).

Pristipoma ronchus Valenciennes, Hist. Nat. Canaries, Poiss., vol. 2, pt. 2, 1836–1844, p. 25, pl. 7, fig. 2. Canaries.

Pristipoma bennettii Lowe, Trans. Zool. Soc. London, vol. 2, pt. 2, 1837 (1841), p. 176. Madeira.—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, 1908–1911, p. 151 (off Tegula River, Natal).

Pomadasys bennettii Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 353 (references).

Pomadasis bennettii Fowler, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 257 (Elmina, Ashantee); p. 283 (Loando, Angola).

Pomadasis bennetti Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 230 (Tegula River, in 60 fathoms).

Pomadasys bennetti Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 677, pl. 28, fig. 2 (False Bay, Agulhas Bank, Natal, Zululand).

Dacymba bennetti Jordan and Hubbs, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 465, pl. 47, text fig. 1 (Port Said).

Cantharus elongatus Castelnau, Mém. Poiss. Afrique Australe, 1861, p. 32. Cape of Good Hope.

Haemulon macrophthalmum Osorio, Jorn. Soc. Sci. Math. Acad. Lisboa, vol. 3, ser. 3, Feb. 1894, p. 174. St. Thomas Island; Rolas Island, West Africa.

Depth 2⅔ to 2¾; head 2⅔ to 2⅞, width 2¼. Snout 3⅙ to 3⅔ in head; eye 3 to 3½, subequal or greater than snout, greater than interorbital; maxillary reaches front nostril, length 3⅛ to 3⅞ in head; bands of villiform teeth in jaws; interorbital 3⅞ to 4¼, slightly convex; preopercle edge denticulate. Gill rakers 8+15, of which 2 above and 3 below rudiments, lanceolate, length ½ of gill filaments or ¼ of eye.

Scales 52 to 54 in lateral line to caudal base and 6 to 8 more on latter; 7 or 8 scales above lateral line to soft dorsal origin, 13 below, predorsal scales extend forward on snout. Scales with 7 or 8 basal striae.

D. XII, 16, third spine 2¼ in head, first ray 2¾; A. III, 12, second spine 2⅖, first ray 2; caudal 1¼, emarginate; pectoral 1⅛; ventral 1⅗.

Brown on back and sides, below silvery white. Above lateral line traces of deeper brown obsolete dots or small spots. Fins all brownish, spinous dorsal tinged dusky.

Mediterranean and Eastern Atlantic. Also reported from Agulhas Bank, Natal and Zululand. The above description from 2 examples in the United States National Museum from Ashantee and Angola, 83 to 137 mm. According to Barnard reaches 550 mm.

POMADASYS MACULATUS (Bloch)

Anthias maculatus Bloch, Naturg. Ausländ. Fische, vol. 7, 1797, p. 7, pl. 326, fig. 2. East Indies.—Forster, Fauna Indica, 1795, p. 16.—Schneider, Syst. Ichth. Bloch, 1801, p. 306 (East Indies).

Lutjanus maculatus Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 193, 239 (East Indies).

Pristipoma maculatum Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 293 (Torres Strait and Amboina).—Kner, Reise Novara, Fische, 1865, p. 52 (Java).—Day, Fishes of Malabar, 1865, p. 21; Proc. Zool. Soc. London, 1865, p. 13 (Cochin, Malabar).—Playfair, Fishes of Zanzibar, 1866, p. 25 (Baganoia, East Africa).—Day, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 734 (Koseir, Red Sea).—Bleeker, Atlas Ichth. Ind. Néerland, vol. 7, 1873–1876, pl. (30) 308; fig. 2; Nederland. Tijdschr. Dierk., vol. 4, 1874, p. (117) 150 (China).—Day, Fishes of India, pt. 1, 1875, p. 74, pl. 19, fig. 5.—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Bangkok).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—Klunzinger, Fische Roth. Meer., 1884, p. 28.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Manila Bay).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Manila Bay).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 510.—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Singapore).—Pearson, Ceylon Administr. Rep., 1912–1913, pt. 4, p. E15 (Gulf of Manaar).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 277 (Pepela Bay, Rotti), p. 278 (Macassar).—Pearson, Ceylon Administr. Report, 1915-18, pp. F10-F12.—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Pomadasys maculatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 27 (Sumatra, Nias, Singapore, Banka, Java, Bawean, Bali, Celebes, Amboina, Waigiu).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong).

Pomadasis maculatus Jordan and Seale, Bull. Bur. Fisher., vol., 26, 1906 (1907), p. 23 (Cavite).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (San Fabian).—JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 259 (Manila).—JORDAN and STARKS, Ann. Carnegie Mus., vol. 11, Nos. 3-4. 1917, p. 450 (Ceylon, Aden, Philippines).—FOWLER, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 36 (Takao).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 230 (Delagoa Bay); 1927, p. 279 (Orani); Mem. Bishop Mus., vol. 10, 1928, p. 207 (compiled).

Pomadasys maculatum BARNARD, Ann. South Afric. Mus., vol. 21, pt. 1, Oct. 1917, p. 679 (Natal, Delagoa Bay, Chinde).

Pristipoma caripa VALENCIENNES, Hist. Nat. Poiss., vol. 5, 1830, p. 261. Pondicherry, Malabar, Batavia, Mahé.—RÜPPELL, Neue Wirbelth., Fische, 1835, p. 124 (Massaua).—CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1057 (Pinang).—BLEEKER, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 31 (Manila Bay).

Depth 2⅔ to 2⅘; head 2⅘ to 3, width 1⅘ to 1⅞. Snout 3 to 3⅛ in head; eye 3⅖ to 3⅗, 1⅛ in snout, 1⅛ to 1⅕ in interorbital; maxillary reaches eye or ⅛ in eye, expansion 2½ to 2¾ in eye, length 3 to 3⅛ in head; lips moderately fleshy, narrow; teeth fine, conic, simple in jaws, in 4 or 5 irregular rows above and 6 or 7 below, outer row little enlarged; interorbital 3⅖ to 4¼, broadly convex; preopercle edge with 31 to 33 small marginal denticles. Gill rakers 6+13, lanceolate, half of gill filaments, which 1¾ in eye.

Scales 49 or 50 in lateral line to caudal base and 6 to 10 more on latter; 7 or 8 scales above lateral line, 12 or 13 below, 26 predorsal forward opposite nostrils, 12 rows on cheek. Suprascapula entire. Scales with 8 to 11 basal radiating striae; apical denticles 33 to 45, weak, small points, with 5 to 11 transverse series of basal elements; circuli very fine.

D. XII, 13, I or 14, I, third spine 1¾ to 1⅞ in total head length, first ray 2⅕ to 2⅔; A. III, 7, I, second spine 1⅞ to 2⅛, first ray 2$\frac{1}{10}$ to 2⅖; caudal 1⅖ to 1½, slightly emarginate behind; least depth of caudal peduncle 3 to 3⅓; pectoral 1 to 1$\frac{1}{10}$; ventral 1⅓ to 1⅗.

Back dull brown, sides below and under surface whitish, everywhere with silvery reflections. On sides of back 4 large dusky or blackish blotches, variable, usually more or less as broad, transverse bands, narrower than paler interspaces; first from predorsal down over suprascapula; second from just before middle of spinous dorsal base; third from junction of dorsals; fourth from last dorsal rays. Sometimes dark blotch on back along middle of soft dorsal base. Spinous dorsal brownish, darker or blackish medially. Soft dorsal with upper half brown. basally pale, though with deep brown bar in white area along each front basal border of ray. Other fins all uniformly pale. Iris pale brown.

Red Sea, Arabia, East Africa, Delagoa Bay, Natal, Seychelles, India, Ceylon, Andamans, Siam, Singapore, Pinang, East Indies, Philippines, Formosa, China, Queensland. Day mentions an abnormal example with an extra spine on one side of the second dorsal spine. I have seen examples with an abnormally thin or narrow simple ray in the soft dorsal. The species is known by its usually large four blackish bands or blotches on each side of the back. Day says it attains at least 400 mm. in length.

12077 [727], 12078. Cavite market. December 1, 1908. Length 150 to 168 mm.
5267. Dagupan, Luzon. March 19, 1908. Length 178 mm.
13004. Iloilo market. March 29, 1908. Length 108 mm.
9268. Manila market. July 10, 1908. Length 173 mm.
10518, 10519, 11446. Manila market. December, 12 1907. Length 64 to 81 mm.
19758 [1525]. Manila market. April 20, 1909. Length 178 mm.
6532, 6533. Off Daet (line fisherman). June 15, 1909. Length 132 to 133 mm.
3651 [D. 5442]. San Fernando Point Light, N. 39° E., 8.4 miles (16° 30′ 36″ N., 120° 11′ 06″ E.), Luzon. May 11,1909. Length 182 mm.
6918. Tacloban market. July 25, 1909. Length 92 mm.
17471. Kowloon market, China. September 18, 1908. Length 102 mm.
56021 U.S.N.M. San Fabian. Bureau of Fisheries (3334). Length 155 mm.
56328 U.S.N.M. Cavite. Dr. G. A Lung. Length 70 to 207 mm. 5 examples.
76622 U.S.N.M. Takao, Formosa. Dr. F. Baker. Length 78 to 220 mm. 5 examples.
76626 U.S.N.M. Takao. Dr. F. Baker. Length 80 mm.
76662 U.S.N.M. Takao. Dr. F. Baker. Length 83 mm.

POMADASYS ARGENTEUS (Forskål)

Sciaena argentea Forskål, Descript. Animal., 1775, pp. xii, 51. Djedda.—Gmelin, Syst. Nat. Linn., pt. 1, 1789, p. 1304 (Arabia).—Walbaum, Artedi Pisc., vol. 3, 1792, p. 317 (on Forskål).

Pomadasys argenteus Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 515, 516 (Arabia).—Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 130 (Tamarida, Sokotra).

Pomadasis argenteus Evermann and Seale, Proc. U. S. Nat. Mus., vol. 31, 1906, p. 508 (Manila).—Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 23 (Cavite).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 259 (Manila).

Pristipoma argenteum Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 249 (Red Sea).—Rüppell, Neue Wirbelth., Fische, 1835, p. 123.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 291 (coast of Africa).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 733 (Koseir, Red Sea).—Day, Fishes of India, pt. 1, 1875, p. 74; Fauna Brit. India, Fishes, vol. 1, 1889, p. 511.—Klunzinger, Fische Roth. Meer., 1884, p. 28.—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).—Tirant, Service Océanogr. Pêches Indo Chine, 6ᵉ note, 1929, p. 168 (Cochin, China).

Pristipoma auritum Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 263. Siam.—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, No. 2, 1849, p. 1058 (Pinang).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 293 (compiled).—Tirant, Service Océanogr. Pêches Indo Chine, 6ᵉ note, 1929, p. 168 (Cochin, China).

Pamadasys auritus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 31 (compiled).

Pristipoma nageb Rüppell, Neue Wirbelth., Fische, 1835, p. 124, pl. 30, fig. 2. Djedda, Red Sea.—Richardson, Ichth. China Japan, 1846, p. 227 (China Sea).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 290 (compiled.)—Kner, Reise Novara, Fische, 1865, p. 41 (Hong Kong).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).

Pristipoma argenteum var. *nageb* Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 733.

Pristipoma commersonii (not Lacépède) Day, Fishes of India, pt. 1, 1875, pl. 8, fig. 3.

Pristipoma hasta (not Bloch) Day, Fishes of India, pt. 1, 1875, pl. 19, fig. 3 (not fig. 4).

Depth 2¾ to 2⅘; head 1⅘ to 2¾, width 2 to 2⅒. Snout 3⅔ to 3⅕ in head; eye 3½ to 3⅗, greater than snout or interorbital; maxillary reaches eye, length 2⅘ in head; teeth villiform, in narrow bands in jaws; interorbital 4⅛ to 4½, broadly and slightly convex; hind preopercle edge serrate. Gill rakers 6+12 short points, little over half gill filaments, which ½ of eye.

Scales 45 in lateral line to caudal base and 6 more on latter; 5 scales above lateral line, 10 below, 23 predorsal forward to nostril, 10 rows on cheek. Scales with 9 or 10 basal radiating striae; apical denticles 18 to 21, with 5 or 6 transverse series of basal elements; circuli fine.

D. XII, 14, I, third spine 1⅔ to 1⅘ in head, second ray $1\frac{9}{10}$ to 2; A. III, 7, I, second spine 1⅗ to 1⅘, second ray 1⅘; caudal 1⅖ to 1½?, slightly emarginate; least depth of caudal peduncle 3⅛ to 3⅓; pectoral 1⅕ to 1¼; ventral 1⅓.

Body pale brown, lighter below. Back with longitudinal dark streaks, variable, usually follow series of scales alternately. Iris grayish. Dorsals pale, with dusky on membranes. Caudal and anal dusted with pale dusky. Other fins pale.

Red Sea, Arabia, India, Siam, Pinang, Singapore, Philippines, China. As described by Cantor *Pristipoma auritum* seems to be the present species:

Eye 7 in head. Mouth very small. Teeth few, outer series medially above little stronger than others and few below nearest mouth angle largest and nearly conical. Caudal entirely covered with minute scales. D. XII, 14, fourth spine ¾ of body depth; A. III, 7 to 8, second spine equals fourth dorsal spine. Upper part of muzzle dark brown, rest of head, upper half of opercle and lax gill membranes and cheeks light brownish gray with silvery reflections. Preopercle, lower half of opercle and gill membrane silvery yellowish, minutely dotted brown. Back and upper part of sides light gray green, lower part of latter and abdomen yellowish white. Scales on occiput and upper half of body with reddish brown spot at root, reflecting lilac and forming irregular series of longitudinal lines; scales of lower half of sides silvery at root, minutely dotted with brown; fin membranes transparent whitish, minutely dotted brown, rays yellowish white; between dorsal spines numerous reddish brown or elongated spots, forming 3 to 6 oblique series; margin of membrane black; between dorsal rays rounded smaller spots forming 4 transverse lines. Iris golden. Length 524 mm.

Cuvier's example was 460 mm. long.

47991. U.S.N.M. Cochin. Lyons Museum. Length 134 mm.
55601. U.S.N.M. Manila. Dr. E. L. Mearns. Length 78 mm.

POMADASYS MANADENSIS (Günther)

Pristipoma manadensis Günther, Proc. Zool. Soc. London, 1871, p. 657. Manado, Celebes.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (Manado).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 278 (Saleyer).

Pomadasys manadensis Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 28 (copied).

Depth 2⅔; head 2⅕. Eye 5 in head, 1½ in snout; maxillary not reaching front eye edge; upper jaw scarcely longer than lower; hind preopercle edge emarginate, angle rounded, not produced, denticulated. Scales 50 in lateral line, 6 above, 13 below. D. XI, 15; fin spines very strong; 2 front dorsal spines very short, second not half third, which longest or nearly ½ head, others gradually shorter, last only half first ray; A. III, 7, second spine much longer and stronger than third, nearly equals third dorsal spine; caudal truncate; pectoral pointed, reaches vent. Silvery, upper half of body with small blackish spots, which occupy bases of scales. Dorsal with 2 rather irregular series of round blackish spots, each size of pupil. Other fins immaculate or with slight blackish tinge. Length 330 mm. (Günther.)

East Indies.

POMADASYS HASTA (Bloch)

Lutjanus hasta Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, p. 109, pl. 246, fig. 1. Japan.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 683 (on Bloch).—Forster, Fauna Indica, 1795, p. 162.—Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 187, 229 (Japan).

Lutianus hasta Schneider, Syst. Ichth. Bloch, 1801, p. 324 (Japan).

Pristipoma hasta Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 247 (Batavia; Malabar).—Valenciennes, Voy. Ind. Orient. Zool. Bélanger, 1834, p. 362 (Malabar).—Gunther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 289 (Red Sea, India, China).—Bleeker, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 31 (Manila Bay).—Day, Proc. Zool. Soc. London, 1865, p. 13 (Cochin, Malabar); Fishes of Malabar, 1865, p. 20.—Playfair, Fishes of Zanzibar, 1866, p. 23 (Bagaruoia, East Africa).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Port Mackey, Queensland).—Day, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 733 (Koseir, Red Sea).—Day, Fishes of India, pt. 1, 1875, p. 73 (not pl. 19, fig. 3).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (47) 325, fig. 3.—Klunzinger, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 350 (Cleveland Bay, Endeavour River, Queensland).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (Port Mackey).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore; Palaboen, Java).—Sauvage, Bull. Soc. Philom. Paris, ser. 7, vol. 5, 1881, p. 105 (Swatow, China).—Klunzinger, Fische Roth. Meer., 1884, p. 28.—Pöhl, Cat. Mus.

Godeffroy, No. 9, 1884, p. 27 (Port Mackey).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 14 (North Celebes; Cebu; Rubi, New Guinea).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—GORGOZA, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Manila Bay; Nasugbu).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 510.—THURSTON, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).—KENT, Great Barrier Reef, 1893, p. 281 (North of Rockingham Bay, Port Darwin, Cambridge Gulf).—RUTTER, Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 75 (Swatow, China).—DUNCKER, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Kuala Pehang).—SMITH and SEALE, Proc. Biol. Soc. Washington, vol. 19, 1906, p. 78 (Mindanao).—SEALE and BEAN, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 244 (Zamboanga).—GILCHRIST and THOMPSON, Ann. South Afric. Mus., vol. 6, 1908–1911, p. 152 (Durban; Natal).—SEALE, Philippine Journ. Sci., vol. 5, No. 4, Oct., 1910, p. 276 (Sandakan).—WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 277 (Macassar).—SEALE, Philippine Journ. Sci., vol. 9, No. 1, 1914, p. 67 (Hong Kong).—PELLEGRIN, Bull. Soc. Zool. France, vol. 39, 1914, p. 225 (Diego-Suarez, Madagascar).—VINCIGUERRA, Ann. Mus. Civico Stor. Nat. Genova, series 3, vol. 10, 1926, p. 574 (Sarawak).—TIRANT, Service. Océanogr. Pèches Indo Chine, 6 ^{e} Note, 1929, p. 168 (Phu-Yen).

Pristipoma (*Pomadasys*) *hasta* ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).

Pomadasys hasta BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 28 (Sumatra, Singapore, Pinang, Bintang, Java, Madura, Bali, Celebes, Sumbawa, Obi Major, Buro, Ceram, Amboina, Waigiu, Philippines).—STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 131 (Gischin, South Arabia).—REGAN, Ann. Natal Mus., vol. 1, 1908, p. 244 (Durban Bay).—GILCHRIST and THOMPSON, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 353 (copied).—BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 677 (Natal; Delagoa Bay).—FOWLER, Proc. Acad. Nat. Sci., Philadelphia, 1929, p. 608 (Hong Kong), p. 641 (Padang).

Pomadasis hasta STEAD, Fishes of Australia, 1907, p. 119 (Queensland, New South Wales, West Australia).—COCKERELL, Mem. Queensland Mus., vol. 5, 1916, p. 55 (Moreton Bay).—JORDAN and STARKS, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 450 (Colombo).—FOWLER, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol 62, 1922, p. 35 (Takao, Formosa).—FOWLER, Journ. Bombay Nat. Hist. Soc., vol. 30, 1925, p. 319 (Calicut); Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 231 (Delagoa Bay); 1927, p. 279 (Port San Pio Quinto, San Fernando, Orani, Philippines); Journ. Bombay Nat. Hist. Soc., 1928, p. 113 (Bombay); Mem. Bishop Mus., vol. 10, 1928, p. 208 (New Guinea).

Labrus commersonii (COMMERSON) LACÉPÈDE, Hist. Nat. Poiss., vol. 3, 1802, pp. 431, 477, pl. 23, fig. 1. Great Ocean [Indo-Pacific].—SHAW, General Zool., Fishes, vol. 4, 1804, p. 493.

Pristipoma commersonii CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 252 (mouths small rivers in southern Madagascar).—BLEEKER, Nederland. Tijdschr. Dierk., vol. 1, 1863, p. 344 (Madagascar).—GUICHENOT, Mém. Soc. Sci. Nat. Cherbourg, ser. 2, vol. 2, 1866, p. 145 (Madagascar).

Pristipoma commersoni CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1054 (Pinang; Singapore).

Pomadasys commersonii FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 528 (Padang).

Lutjanus microstomus Lacépède, Hist. Nat. Poiss., vol. 3, 1802, pl. 34, fig. 2; vol. 4, 1802, pp. 181, 216. Great Equinoxial Ocean [Indo-Pacific].

Coius gudjutia Buchanan-Hamilton, Fishes of Ganges, 1822, pp. 94, 370. Ganges mouths.

Pristipoma kaakan Cuvier, Hist. Nat. Poiss., vol. 5, p. 244. Arian Coupang River, Pondicherry; Mahé.—Rüppell, Neue Wirbelth., Fische, 1835, p. 123, pl. 20, fig. 1 (Massaua).—Richardson, Ichth. China Japan, 1846, p. 227.

Pristipoma chrysobalion (Kuhl and Van Hasselt) Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 248. No locality [Java].

Polotus nitidus Blyth, Journ. Asiat. Soc. Bengal, vol. 27, 1858, p. 283. Calcutta.

Pristipoma nageb (not Rüppel) Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876-1877, pl. (73)351, fig. 4.

Pomadasys nageb Bleeker, Atlas Ichth. Ind. Nêrland., vol. 8, 1876–1877, p. 29 (Sumatra, Singapore, Bintang, Banka, Java, Madura, Borneo, Celebes, Amboina).

Depth 2⅓ to 2⅘; head 2⅗ to 3, width 2 to 2½. Snout 2⅕ to 2⅖ in head; eye 3⅛ to 6¼, 1½ to 2½ in snout or greater than snout in young, 1 to 1⅗ in interorbital or greater than interorbital in young; maxillary reaches eye or ¾ to eye with age, expansion 1⅔ to 3 in eye, length 3¼ to 3⅖ in head; marginal slit along each side of snout front; teeth conic, in bands in jaws, outer row slightly enlarged, curved inward; palate and tongue toothless; interorbital 4 to 4¼, elevated little convexly; preopercle edge denticulate, serrae at lower corner little sparse and largest, denticles about 38, edge smooth with age. Gill rakers 5+13, small, short, ½ gill filaments, which ½ of eye.

Scales 38 to 46 in lateral line to caudal base and 8 more on latter; 7 or 8 scales above lateral line, 11 or 12 below, 28 to 30 predorsal extending forward above nostrils, 13 to 17 rows on cheek. Suprascapula strongly denticulated. Scales with 9 or 10 basal radiating striae; apical denticles 35 to 37, small points, with 10 to 17 transverse series of basal elements; circuli very fine.

D. XIII, 14, I, third spine 1½ to 1⅘ in head, first ray 2⅗ to 3⅓; A. III, 7, I, second spine 1⅖ to 1¾, first ray 1⅘ to 2; caudal 1⅖ to 1⅗, very slightly emarginate behind, truncate as expanded; least depth of caudal peduncle 3⅒ to 3⅛; pectoral 1 to 1⅒; ventral 1¼ to 1⅓.

Gray brown on back, paler to whitish below, everywhere with silvery white reflections. Each scale on back with dark or dusky basal spot, ever more or less variable or irregular. Iris brownish. Dorsals dull brownish, spines burnished with silvery; membranes of spinous fin broadly dusky terminally; spinous fin over greater portion basally with 3 or 4 rows of blackish spots; on soft fin spots smaller and 2 basal rows more even. Caudal dusky terminally. Other fins all pale.

Red Sea, Arabia, East Africa, Natal, Madagascar, Seychelles, India, Ceylon, Andamans, Malacca, Singapore, Pinang, East Indies, Philippines, Formosa, China, Japan, Queensland, West Australia, New South Wales. Well figured by Bleeker, and known by its speckled back and the very distinct black spots on the dorsals. In some examples the spots on the back and sides tend to form into longitudinal dark streaks, though not entirely continuous as in *Pomadasys argenteus.* With age many old examples are very finely mottled or specked with dusky. Only small or young examples with the pattern of Day's plate 19, figure 3, though these are also more or less mottled dusky on the back.

20136. Bacoor, Luzon. June 15, 1908. Length 111 mm.

9887, 9888. Basud River, Luzon. June 15, 1909. Length 165 to 175 mm.

21252. Below mouth of Mindanao River, Mindanao. May 20, 1908. Length 66 mm.

22477. Buena Vista, Guimaras Island. January 14, 1909. Length 94 mm.

12089. Capunuypugan Point, Generale Island. May 10, 1908. Length 188 mm.

12877 to 12879. Cotabato. May 20, 1908. Length 125 to 138 mm.

12999. Iloilo market. March 28, 1908. Length 195 mm.

11524, 11525, 11644, 20429. Malampaya Island, Palawan. December 26, 1908. Length 123 to 212 mm.

19596, 19597. Manila Harbor. January 13, 1908. Length 61 to 75 mm.

4655. Manila market. January 13, 1908. Length 443 mm. Life color silvery, scales on upper parts with red-brown spots forming irregular lines; snout and cheeks greenish bronze; dorsal pale purple, with brown spots, rays like silver fins; ventrals greenish; caudal dark green, with black edges; anal spines and rays silvery green, the first membrane pearly.

5253. Manila market. March 23, 1908. Length 225 mm.

6726. Manila market. December 5, 1908. Length 386 mm.

6756, 6757. Manila market. April 20, 1909. Length 238 to 250 mm.

7626, 7639. Mouth of Malampaya River, Palawan. December 28, 1908. Length 275 to 403 mm.

8574, D. 5442. San Fernando Point Light, N. 39° E., 8.4 miles (16° 30′ 36″ N., 120° 11′ 06″ E.), Luzon. May 11, 1909. Length 283 mm.

11320. San Roque. July 29, 1909. Length 147 mm.

9541, 21673. Santiago River, Luzon. February 20, 1909. Length 157 to 168 mm.

12320 to 12325. San Vicente Harbor. November 13, 1908. Length 148 to 180 mm.

A787, A788. Sebatic Island. October 1, 1909. Length 214 to 395 mm.

A662. Simaluc Sibi Sibi Island. September 23, 1909. Length 377 mm.

19416. Sorsogon market. March 12, 1909. Length 192 mm.

7268. Stream at Maagnas, Luzon. June 17, 1909. Length 124 mm.

8332. Subig Bay. January 7, 1908. Length 95 mm.

7667. Ulugan Bay, Palawan. December 28, 1908. Length 360 mm.

17199, 20400. Verde del Sur Island. April 6, 1909. Length 73 to 135 mm.

19339. Sandakan Bay, Borneo. March 2, 1908. Length 66 mm.

5126. Sandakan Bay. March 4, 1908. Length 193 mm.

A1014. Buka Buka Island, Gulf of Tomini, Celebes. November 20, 1909. Length 100 mm.

14620. Doc Can Island, Sulu Sea. January 7, 1910. Length 160 mm.

9960, 11472. Kowloon market, China. September 18, 1908. Length 112 to 122 mm.

6844. Kowloon market. October 20, 1908. Length 237 mm.

5855 U.S.N.M. North Pacific Exploring Expedition. W. Simpson. Length 137 mm.

12674 U.S.N.M. Madras, India. British Museum. Length 130 mm.

30597 U.S.N.M. New Guinea. Linnaean Society of New South Wales. Length 223 mm.

30636 U.S.N.M. New Guinea. Australian Museum. Length 198 mm.

49313 U.S.N.M. Red Sea. Belotti. Length 125 mm. As *Pristipoma nageb.*

51503 U.S.N.M. Korea? Dale and Jouy. Length 115 mm.

56042 U.S.N.M. Mindanao. Bureau of Fisheries (4219). Length 268 mm.

57932 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 71 mm.

57969 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 47 to 52 mm. 2 examples.

71911 U.S.N.M. Japan. *Albatross* Collection. Length 257 mm.

71912 U.S.N.M. Japan. *Albatross* Collection. Length 225 mm.

72674 U.S.N.M. Java. Bryant and Palmer. Length 242 mm. As *Pomadasys nageb.*

76628 U.S.N.M. Takao, Formosa. Dr. F. Baker. Length 262 mm.

27615 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 204 mm. When fresh in arrack rich, dark olivaceous above, pale or whitish below and whole body more or less washed with silvery white. Each scale on side, especially above, with rather large deep olivaceous spot, so more or less irregular longitudinal bands form. Dorsal olivaceous gray, sides of spines burnished silvery and both spinous and soft fins with 3 rows of deep blackish brown spots or blotches placed longitudinally on fins; lower series mostly concealed by scaly sheath below. Upper dorsal edge gray black. Anal and caudal uniform olivaceous gray. Caudal dusky gray. Pectoral grayish, tinged yellowish olive. Ventral mostly greenish yellow. As *Pomadasys commersonii.*

POMADASYS OPERCULARIS (Playfair)

Pristipoma operculare Playfair, Fishes of Zanzibar, 1866, p. 24, pl. 4, fig. 1. Aden; Port Natal.—Day, Fishes of India, pt. 1, 1875, p. 76, pl. 20, fig. 2.—Boulenger, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 512.—Gilchrist, Marine Invest. South Africa, vol. 1, 1902, p. 110 (compiled).—Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 13, 1907, p. 203 (Madagascar).—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, 1908–1911, p. 152 (Durban).—Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 225 (Fort Dauphin, Madagascar).

Pristipoma (*Pomadasys*) *operculare* Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).

Pomadasys opercularis Regan, Ann. Durban Mus., vol. 1, 1908, p. 244 (Durban Bay).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 354 (references).

Pomadasis opercularis Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 231 (Delagoa Bay); 1927, p. 279 (Santa Maria; Philippines).

Pomadasys operculare Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 675 (East London, Natal, Zululand, Delagoa Bay).

Depth 3; head 2⅞, width 2½. Snout 2⅘ in head; eye 4, 1⅖ in snout, 1 in interorbital; maxillary reaches nostril, expansion ⅓ of eye, length 3⅒ in head; teeth fine, upper in 4 or 5 irregular rows, lower in 5 or 6 and each jaw with outer enlarged row; interorbital 4½ in head, convex; hind preorbital edge denticulate. Gill rakers 7+15, lanceolate.

Scales 54 in lateral line to caudal base and 4 more on latter; 7 rows of scales above lateral line, 15 below, 37 predorsal. Scales with 8 to 12 basal striae; apical points 9 to 25, with 7 to 9 rows of basal segments.

D. XII, 13, I, fourth spine 1¾ in head, first ray 2½; A. III, 8, I, second spine 1⅔, first ray 2⅒; caudal 1¼, emarginate; least depth of caudal peduncle 3⅖; pectoral 1⅛; ventral 1⅖.

Back brown, whitish below. On back 5 or 6 irregular longitudinal rows of dusky brown spots, lowest level with eye. Spinous dorsal dark gray, with basal neutral dusky blotch and membranes terminally dark. Soft dorsal pale, terminal half and subbasal longitudinal band dark. Anal dusky gray forward, pale behind. Caudal dusky behind, otherwise brownish. Paired fins pale. Length 170 mm.

Red Sea, Arabia, Natal, Madagascar, Philippines. Described above from an example from Delagoa Bay, Portuguese East Africa, in the Academy of Natural Sciences of Philadelphia, 170 mm. long. Also two others in the same collection, 84 to 87 mm. from Santa Maria, Ilocos Sur. January 26, 1923. Dorsals with more or less dusky terminally, also caudal. Rather obscure dusky blotch on hind portion of opercle above. Dark lines on back generally longitudinal, variable as spots or short bars, especially above lateral line. Caudal little dusky terminally. Anal and paired fins pale.

POMADASYS MULTIMACULATUS (Playfair)

Pristipoma multimaculatum Playfair, Fishes of Zanzibar, 1866, p. 23, pl. 3, fig. 3. Bagamoia, East Africa; Port Natal.—Gilchrist and Thompson, Ann. Durban Mus., vol. 6, 1908–1911, p. 154 (Durban).

Pomadasys multimaculatum Regan, Ann. Durban Mus., vol. 1, 1908, p. 244 (Durban Bay).—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 354 (references).—Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 679 (Natal).

Depth 2⅘; head 2⅘. Snout 2¾ in head; eye 6, 2¼ in snout, less than interorbital; maxillary reaches opposite hind nostril, length 3½ in head; teeth in villiform bands in jaws; interorbital convex; preopercle edge denticulate, teeth stronger around angle. (Gill rakers 12 below—Barnard.) Scales 51 in lateral line, 7 or 8 above, 16 below. Suprascapula hardly serrated. Preorbital scaly. D. XII, 13, third spine 2⅗ in head, second ray 2⅘; A. III, 7, second spine 2, first ray 2⅗; caudal 1⅖, hind edge slightly emarginate; least depth of caudal peduncle 3⅔; pectoral 1⅕; ventral 1⅖. Silvery; head, back and upper part of sides thickly covered with small brown spots, of which one at base of each scale, smaller and closer on occiput. Scales on lower part of body with bases minutely dotted brown. Dorsals spotted like body, other fins immaculate. Length 305 mm. (Playfair.)

East Africa, Natal.

Subgenus RHONCISCUS Jordan and Evermann

Body with dark longitudinal bands.

POMADASYS STRIATUS (Gilchrist and Thompson)

Pristipoma striatum GILCHRIST and THOMPSON, Ann. South Afric. Mus., vol. 6, 1908, p. 153. Natal; Ann. Durban Mus., vol. 1, 1917, p. 354 (references).

Pomadasys striatum BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 680 (Natal; Delagoa Bay).

Depth 2⅗ to 2⅘; head 2⅘ to 3. Eye 3½ in head, 1¼ in snout, subequal with interorbital; maxillary reaches hind nostril; preopercle edge serrate. Gill rakers 10 or 11 on lower branch of first arch. Scales 58 to 62 (52 according to Gilchrist and Thompson) in lateral line, 12 above, 24 below (18 according to Gilchrist and Thompson). Tubes in lateral line mostly bifurcate. D. XI or XII, 13 or 14, fifth or fourth and fifth spines longest, last spine not longer than penultimate (fourth 2⅗ in head according to Gilchrist and Thompson); A. III, 6 (7 according to Gilchrist and Thompson), second spine stronger and slightly longer than third (pectoral 1⅙ in head, ventral 1⅘—Gilchrist and Thompson). Silvery, with 3 dark, longitudinal stripes, upper following dorsal profile, middle from above orbit follows lateral line to end of soft dorsal where meeting lower, which horizontal from eye to caudal. Reaches 190 mm. (Barnard.)

Natal, Delagoa Bay.

POMADASYS STRIDENS (Forskål)

Sciaena stridens FORSKÅL, Descript. Animal., 1775, pp. XII, 50. Arabia.—BONNATERRE, Tabl. Ichth., 1788, p. 121 (Red Sea).—GMELIN, Syst. Nat. Linn., vol. 1, 1789, p. 1303 (Arabia).—WALBAUM, Artedi Pisc., vol. 3, 1792, p. 317 (on FORSKÅL).

Perca stridens SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 87 (Arabia).

Pristipoma stridens RÜPPELL, Neue Wirbelth., Fische, 1835, p. 122, pl. 31, fig. 1 (Suez).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 300 (Red Sea).—PLAYFAIR, Fishes of Zanzibar, 1866, p. 26 (Zanzibar; Aden).—KLUNZINGER, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 732 (Red Sea).—DAY, Fishes of India, pt. 1, 1875, p. 72 (Aden).—KLUNZINGER, Fische Roth. Meer., 1884, p. 28 (Koseir).—BOULENGER, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 508.—PFEFFER, Jahrb. Hamburg. Wiss. Anstalt., vol. 6, 1889, p. 22 (Suez).—REGAN, Journ. Bombay Nat. Hist. Soc., vol. 16, pt. 2, 1905, p. 330 (Persian Gulf).—PELLEGRIN, Annuario Mus. Zool. R. Universit. Napoli, new ser., vol. 3, No. 27, July 11, 1912, p. 6 (Massaoua).—NORMAN, Trans. Zool. Soc. London, pt. 3, No. 12, July 1927, p. 380 (Kabret, Red Sea).

Pristipoma (Pomadasys) stridens ZUGMAYER, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).

Pomadasys stridens STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 130 (Gischin and Scheich Othman, South Arabia).

Pristipoma simmene (EHRENBERG) CUVIER, Hist. Nat. Poiss., vol. 5, 1830, p. 260. Massauah, Red Sea.

Pristipoma nageb (not RÜPPELL) DAY, Fishes of India, pt. 1, 1875, pl. 18, fig. 8.

Depth 3¼ to 3⅓; head 3 to 3⅛, width 2⅕ to 3⅛. Snout 3 to 3½ in head; eye 3¼ to 4, 1 to 1⅕ in snout, 1⅕ in interorbital, greater in young; maxillary reaches eye, length 3⅓ to 3½ in head; teeth villiform, slender, in rather wide bands in jaws; interorbital 3⅘ to 4⅖, broadly convex; preopercle edge finely denticulate. Gill rakers 7+15, small, lanceolate, ⅓ of gill filaments, which 1½ in eye.

Scales 70 along above lateral line to caudal base and 9 more on latter; tubes about 57 in lateral line to caudal base and 8 more on latter; 10 scales above lateral line, 13 below, 30 predorsal forward to nostrils, about 12 across cheek of which 5 on preopercle flange. Supraoccipital entire. Scales with 9 basal radiating striae; apical denticles 32, with 8 transverse series of basal elements; circuli fine.

D. XII, 14, I, fourth spine 1⅔ to 2 in head, third ray 2⅗; A. III, 8, I, third spine 2⅓ to 3⅓, first ray 2½; caudal 1⅓, emarginate; least depth of caudal peduncle 3¼ to 3½; pectoral 1⅛ to 1⅓; ventral 1½ to 1⅗.

Brown, with coppery luster, also dusted with warm brown. Dark spot on opercle. Indistinct dark band from opercular spot axial to caudal peduncle. Iris yellowish. Fins all pale.

Red Sea, Arabia, Persian Gulf, Zanzibar.

49312 U.S.N.M. Red Sea. Bellotti. Length 79 to 164 mm. 3 examples.

POMADASYS FURCATUS (Schneider)

Grammistes furcatus SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 187, pl. 43. Mari orientali.

Pristipoma furcatum DAY, Fishes of India, pt. 1, 1875, p. 73, pl. 19, fig. 2 (Madras).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (74) 352, fig. 2.—KLUNZINGER, Fische Roth. Meer., 1884, p. 28.—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 510.—PEARSON, Ceylon Administr. Rep., 1912–1913, pt. 4, p. E16 (Gulf of Manaar).—PELLEGRIN, Bull. Soc. Zool. France, vol. 39, 1914, p. 225 (Mahambo and Fort Dauphin, Madagascar).—PEARSON, Ceylon Administr. Report, 1915–18, p. F14.—MALPAS, Ceylon Administr. Report, 1921, p. E5.—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Pomadasys furcatus BLEEKER, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, p. 26 (Sumatra and Java).—STEINDACHNER, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 130 (Gischin, South Arabia).

Pomadasys furcatum BARNARD, Ann. South Afric. Mus., vol. 21, pt. 2, Oct. 1927, p. 681 (Natal; Zululand).

Pristipoma paikeeli Valenciennes, Hist. Nat. Poiss., vol. 5, 1830 p. 259 (on *Paikeeli* Russell, Fishes of Coromandel, vol. 2, 1803, p. 16, pl. 121, Vizagapatam).—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, No. 2, 1849, p. 1056 (Pinang).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 292 (compiled).

Pristipoma dussumieri Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 259. Malabar.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 291 (no locality).—Day, Fishes of Malabar, 1865, p. 22 (copied) ; Fishes of India, pt. 1, 1875, p. 75, pl. 19, fig. 6.—Boulenger, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 511.—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 367 (Travancore).

Pristipoma (Pomadasys) dussumieri Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 21, 1913, p. 10 (Mekran; Oman).

Pomadasys dussumieri Steindachner, Denkschr. Akad. Wiss. Wien. Math.-nat. Klasse, vol. 71, pt. 1, 1908, p. 131 (Gischin, South Arabia).

Pristipoma punctulatum Rüppell, Neue Wirbelth., Fische, 1835, p. 124, pl. 30, fig. 3. Massaua, Red Sea.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 290 (Mauritius).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 732 (Koseir, Red Sea).

Pomadasys punctulatus Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 130 (Gischin, Bal Hâf, Kor Gorrich, Sokotra).

Pristipoma anas Valenciennes, Compt. Rendu Acad. Sci. Paris, vol. 54, 1862, p. 9.—Guichenot, Notes Ile Réunion, vol. 2, 1862, p. 25.—Sauvage, Hist. Nat. Madagascar, 1891, p. 160, pl. 28, fig. 4, *a–b* (type).

Pristipoma neilli Day, Proc. Zool. Soc. London, 1867, p. 936. Madras.

Pomadasys taeniophorus Regan, Ann. Natal Mus., vol. 1, pt. 3, 1908, p. 251, pl. 39. Kosi Bay.—Gilchrist and Thompson, Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 354 (references).

Pristipoma taeniophorus Gilchrist and Thompson, Ann. South Afrc. Mus., vol. 6, 1908–1911, p. 153 (Natal).

Pomadasis striatus (not Gilchrist and Thompson) Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 230 (Delagoa Bay).

Depth 2⅚; head 3, width 1⅘. Snout 3 in head; eye 3¾, 1⅕ in snout, 1⅒ in interorbital; maxillary 3⅓ in head, reaches hind nostril, expansion ⅓ of eye; 2 mandibular pores followed by groove; upper teeth in 2 or 3 rows and lower 4 or 5, each jaw also with outer enlarged row; interorbital 3⅓ in head, broadly convex; preopercle edge denticulate. Gill rakers 7+10, lanceolate.

Scales 52 in lateral line to caudal base and 6 more on latter; 6 scales above lateral line, 14 below, 33 predorsal. Scales with 6 or 7 basal striae; apical denticles 45 to 60, with 3 to 5 rows of basal segments; circuli fine.

D. XII, 14, i, fourth spine 2⅓ in head, second ray 2⅔; A. III, 8, i, second spine 2⅖, first ray 2⅓; caudal 1⅖, emarginate; pectoral 1¼; ventral 1¾.

Above, purplish brown. Four dark horizontal lines, lowest back from pectoral axil. Opercle with blackish blotch little less than eye. Iris whitish. Spinous dorsal gray, with white spot at base of each membrane. Soft dorsal and caudal gray, former whitish basally. Other fins whitish. Length 160 mm.

Red Sea, Arabia, Zululand, Natal, Réunion, Madagascar, India, Ceylon, Pinang, East Indies. The above description from an example in the Academy of Natural Sciences of Philadelphia, obtained in Delagoa Bay, which I wrongly identified as *Pomadasis striatus*.

The following is adapted from Day: Depth $2\frac{2}{5}$; head $3\frac{1}{10}$. Snout $3\frac{1}{4}$ in head; eye $3\frac{4}{5}$, $1\frac{1}{5}$ in snout, 1 in interorbital; maxillary not quite reaching front eye edge, $3\frac{7}{8}$ in head; teeth villiform, outer upper row enlarged; interorbital but little elevated; preopercle edge serrate. Scales 54 along above lateral line, 52 along below lateral line; tubular scales 50 in lateral line; 7 scales above lateral line, 15 below, predorsal apparently forward in interorbital at least, about 7 rows (on figure) on cheek. D. XII, 14 (figure shows 15 rays), third spine 2 in head, first ray $2\frac{1}{6}$; A. III, 7, second spine $1\frac{3}{5}$, first ray 2; caudal $1\frac{1}{8}$, moderately emarginate; least depth of caudal peduncle $2\frac{1}{2}$; pectoral $1\frac{1}{10}$; ventral $1\frac{1}{8}$. Grayish, white on abdomen. Brilliant golden band from eye to caudal base and second band above, parallel, runs along a few rows of scales from suprascapula. Fins silvery, dashed with gold; dark band along dorsal base and spinous fin with black edge; upper portions of soft dorsal and last half of spinous dorsal dark gray.

Cuvier's example was 153 mm. long and is described as silvery, slightly brown on back and with 6 golden longitudinal lines.

The following refers to the nominal *Pristipoma anas* as described and figured by Sauvage: Depth $2\frac{3}{4}$; head $3\frac{1}{2}$. Snout $3\frac{1}{3}$ in head; eye $3\frac{3}{4}$, $1\frac{1}{8}$ in snout, equals interorbital; maxillary apparently would reach eye, length $3\frac{1}{2}$ in head; teeth feeble, little stronger medianly above; interorbital convex; hind preopercle edge denticulate. Scales 53 in lateral line to caudal base, 6 above, 13 below, predorsal forward at least to front of eye, 13 rows on cheek. Suprascapula strongly denticulated. D. XII, 15 (figure shows 13 soft rays), third spine $2\frac{2}{5}$ in head, first ray $2\frac{2}{3}$; A. III, 7, second spine $1\frac{2}{5}$, first ray $1\frac{3}{4}$; caudal $1\frac{1}{4}$, little emarginate behind; least depth of caudal peduncle $2\frac{2}{3}$; pectoral $1\frac{1}{5}$; ventral $1\frac{1}{4}$. Body with 10 or 11 longitudinal black bands upon silvery ground color. Below silvery. Fins transparent, not colored. Length 270 mm.

Family TERAPONIDAE

Body oblong, compressed. Mouth moderate. Teeth villiform in jaws, outer sometimes enlarged. Vomer and palatines with deciduous teeth, sometimes absent. Preopercle serrated. Opercle with 1 or 2 strong spines. Preorbital entire or serrate. Branchiostegals 6. Air bladder divided in two sections by constriction. Pyloric coeca moderate in number. Scales moderate or small in size. Dorsal fin notched, with 12 or 13 spines. Anal spines 3.

Carnivorous fishes in tropical seas, some in fresh waters. Many often with quite contrasted color pattern.

ANALYSIS OF GENERA

a^1. DATNIOIDINAE. Lower jaw well protruded; preorbital entire; caudal rounded; back elevated; with dark vertical bands**Datnioides.**

a^2. TERAPONINAE. Jaws equal or lower shorter; preorbital serrated, at least in young; caudal emarginate, rarely truncate; back not especially elevated, usually low; usually with horizontal dark bands.

  b^1. Teeth entire or simple.

    c^1. Teeth conic, undivided, in several series**Terapon.**

    c^2. Teeth flattened, triserial above, biserial below**Pelates.**

  b^2. Teeth flattened, tridentate**Helotes.**

Genus DATNIOIDES Bleeker

Datnioides BLEEKER, Nat. Tijds. Nederland. Indië, vol. 5, 1853, p. 440. Type *Coius polota* BUCHANAN-HAMILTON, designated by BLEEKER, Arch. Néerland. Sci. Nat. Harlem, vol. 2, 1876, p. 272.

Body compressed, back elevated. Eye moderate. Upper jaw well protractile. Preopercle serrated. Opercle with short spine. Teeth conic, acute, in bands in jaws, none on palate. Gill opening little cleft. Pseudobranchiae present. Branchiostegals 6. Air bladder simple. Pyloric appendages few. Scales 50 to 80 in a lateral series, ctenoid. Maxillary and preorbital scaleless. Dorsal with 12 spines and 13 to 17 rays. Anal spines 3, rays 8 to 10. Dorsal and anal spines strong. Caudal convexly rounded behind. Pectoral pointed.

ANALYSIS OF SPECIES

a^1. Scales 110 along above lateral line, 90 along below; dorsal rays 15 to 17. **microlepis.**

a^2. Scales 70 along above lateral line, 56 along below; dorsal rays 13 or 14. **polota.**

DATNIOIDES MICROLEPIS Bleeker

Datnioides microlepis BLEEKER, Nat. Tijds. Nederland. Indië, vol. 5, 1853, p. 442. Pontianak, Kapuas River, Borneo.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 339 (compiled).—BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (13) 291, fig. 2; vol. 8, 1877, p. 32 (Pontianak and Sintang, Borneo, Siam).—MARTENS, Preuss. Exp. Ost Asien, 1876, p. 387 (Kapuas River and Danau Sriang, Borneo).

Depth 2⅕; head 2½. Snout 3⅛ in head from snout tip; eye 4½, 1⅖ in snout; maxillary reaches ⅕ in eye, length 2⅓ in head; teeth very small, outer row little larger; interorbital little elevated; preopercle edge denticulate.

Scales 110 along above lateral line to caudal base, 90 along below; 22 scales above lateral line, 38 below, 40? predorsal forward opposite front eye edge, 23 on cheek of which 8 on preopercle flange.

D. XII, 14, I, fifth spine 2½ in total head length, sixth ray 2; A. III, 10, I, second spine 2⅛, third ray $2\frac{1}{10}$; caudal 2, convex behind; least depth of caudal peduncle 3⅓; pectoral 2; ventral 1⅓, with filament.

Red or rosy. Iris red. Eight broad, deep brown or blackish bands transversely; first from occiput to eye and then obliquely down posteriorly over cheek; second from predorsal vertically to side of breast before pectoral; third from front dorsal spines to belly; fourth from middle dorsal spines till just before anal origin; fifth from last dorsal spines to middle of anal; sixth from middle of soft dorsal base down over front of caudal peduncle and bar vertically across outer portions of last anal rays; seventh as pair at caudal with anterior on caudal peduncle and narrower posterior at caudal base. Ventral dusky brown terminally. Length 202 mm. (Bleeker.)

Siam, East Indies.

DATNIOIDES POLOTA (Buchanan-Hamilton)

Coius polota Buchanan-Hamilton, Fishes of Ganges, 1822, pp. 95, 370, pl. 38, fig. 31. Ganges estuaries.—Schlegel, Fauna Japon., Poiss., pt. 1, 1842, p. 17.—Richardson, Zool. Voy. Sulphur, Fish, 1844, p. 83 (note).—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 998 (note in passing).

Datnioides polota Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 339 (Borneo, India).—Kner, Reise Novara, Fische, 1865, p. 50 (Java).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (27)305, fig. 1.—Day, Fishes of India, pt. 1, 1875, p. 96, pl. 24, fig. 6 (Calcutta).—Martens, Preuss. Exp. Ost Asien, 1876, p. 387 (Bangkok).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 154 (Matang, Borneo).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 534, fig. 162.—Vinciguerra, Ann. Mus. Civico Stor. Nat. Genova, series 2, vol. 9, 1889–90, p. 162 (Rangoon).—Lloyd, Rec. Indian Mus., vol. 1, 1907, p. 227 (Akyab).—Vinciguerra, Ann. Mus. Civico Stor. Nat. Genova, series 3, vol. 10, 1926, p. 587 (Sarawak).—Tirant, Service Océanogr. Pêches Indo Chine, 6 ᵉ Note, 1929, p. 168 (Thudaumot).

Chaetodon quadrifasciatus (not Schneider 1801) Sevastianov, Mém. Acad. Sci. St. Pétersbourg, vol. 1, 1809, p. 448, pl. 18.

Datnioides quadrifasciatus Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1877. p. 32 (Sumatra, Borneo).—Day, Fishes of India, Suppl., 1888, p. 786 (note).—Weber, Nova Guineae, vol. 9, pt. 4, 1913, p. 570 (Bivak Island, Lorentz River, Rivierkamp and Alkmaar).—Hora, Journ. Nat. Hist. Soc. Siam, vol. 6, No. 2, 1923, p. 176 (Montaburi); Mem. Asiat. Soc. Bengal, vol. 6, pt. 9, 1924, p. 486 (Patalung River mouth).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 212 (compiled).

Coius quadrifasciatus Hora, Mem. Indian Mus., vol. 5, 1923, p. 767 (Chilka Lake).

Coius binotatus Gray, Illustrations Indian Zool. Hardwicke, vol. 3, 1833–1834, pl. 89, figs. 2–2*a*. India.—Schlegel, Fauna Japonica, Poiss., pt. 1, 1842, p. 17 (note).

Lobotes hexagona Bleeker, Nat. Tijds. Nederland. Indië, vol. 1, 1850, p. 9. Bandjermassing, in rivers; vol. 2, 1851, p. 165 (note).

Depth 2⅕ to 2½; head 2⅖ to 2½, width 2⅛. Snout 3⅔ to 3⅘ in head from snout tip; eye 4⅗ to 4⅘, 1⅛ to 1⅕ in snout, greater than interorbital; maxillary to or ¼ in eye, expansion 2, length 2¾ to 3 in head from snout tip; teeth fine, in bands in jaws, outer row enlarged; palate and tongue toothless; interorbital 6 to $6\frac{4}{5}$, convex. Gill rakers 7 + 9, short points $\frac{1}{3}$ of gill filaments, which $1\frac{1}{4}$ in eye.

Scales 60 to 62 in lateral line to caudal base and 10 more on latter; 10 scales above lateral line, 19 below, 26 predorsal forward opposite eye center, 15 rows on cheek of which 5 rows on preopercle flange. Suprascapula denticulate. Scales with 7 basal radiating striae; apical denticles 50, with 2 or 3 transverse series of basal elements; circuli very fine.

D. XII, 13, I, fourth spine $2\frac{1}{8}$ to $2\frac{1}{3}$ in total head length, fourth ray $2\frac{1}{4}$ to $2\frac{2}{5}$; A. III, 8, I, second spine $1\frac{9}{10}$ to 2, second ray $2\frac{1}{10}$ to $2\frac{1}{4}$; caudal $1\frac{4}{5}$ to $1\frac{7}{8}$, convex behind; least depth of caudal peduncle $3\frac{2}{5}$ to $3\frac{4}{5}$; pectoral $1\frac{2}{3}$ to $1\frac{3}{4}$; ventral $1\frac{1}{3}$ to $1\frac{2}{5}$.

Brown, paler below. Five transverse dark brown bands little narrower than pale interspaces, last broken or irregular, or as blotches on caudal peduncle and caudal base.

India, Siam, East Indies.

4094 U.S.N.M. Ceylon ? National Institute. Length 147 mm.
21173 U.S.N.M. Siam. Museum Hist. Nat. Paris. Length 129 mm.
28566 U.S.N.M. Cochin China. Mus. Hist. Nat. Paris. Length 133 mm.

Genus TERAPON Cuvier

Terapon CUVIER, Règne Animal, vol. 2, 1817, p. 295. Type *Holocentrus servus* BLOCH, designated by BLEEKER, Arch. Néerland. Sci. Nat. Harlem, vol. 11, 1876, p. 267. (Error.)

Therapon CUVIER, Règne Animal, vol. 2, ed. 2, 1829, p. 148. Type *Holocentrus servus* BLOCH.

Djabub FORSKÅL, Descript. Animal., 1775, p. 44 (50). Atypic. Type *Sciaena jarbua* FORSKÅL, understood by vernacular name. (Inadmissible.)

Pterapon GRAY, Illustrat. Indian Zool. Hardwicke, vol. 2, 1833–1834, pl. 88, fig. 1. Type *Pterapon trivittatatus* GRAY=*Sciaena jarbua* FORSKÅL, monotypic.

Mesopristes BLEEKER, Nat. Geneesk. Arch. Nederland. Indië (Typogr. Batav.), vol. 2, 1845, p. 523. Type *Mesopristes macracanthus* BLEEKER, monotypic.

Autisthes DE VIS, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 398. Type *Autisthes argenteus* DE VIS, monotypic.

Hephaestus DE VIS, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 399. Type *Hephaestus tulliensis* DE VIS, monotypic.

Eutherapon FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527. Type *Therapon theraps* CUVIER, orthotypic.

Body ovate to elliptical, usually well compressed. Head moderate to large. Snout long. Mouth moderately large, terminal, protractile, cleft oblique, jaws equal. Maxillary exposed terminally or behind, without supplemental bone. Lips plicate, rather thin. Teeth in jaws in bands, or outer row enlarged or conic; variably caducous when present on vomer and palatines. Preorbital serrate in young. Preopercle more or less strongly serrated. Opercle with one or two pungent spines. Suprascapula and coracoid usually exposed. Gill membranes separate, free from isthmus. Gill rakers moderate, short, stout. Branchiostegals 6. Pseudobranchiae present. Air bladder divided, with front section shorter than hind section. Pyloric coeca few or moderate. Vertebrae 25, of which 13 to 15 caudal. Scales moderate or small, 40 to 100 in lateral series, round, adherent, ctenoid. Preorbital usually partly with cycloid scales. Dorsal and anal with basal scaly sheaths. Lateral line complete, reaches caudal base, tubes simple and of moderate size. Dorsal divided in two parts by deep notch, with 11 to 13 spines, rays 8 to 14. Anal spines 3, rays 7 to 12. Pectoral rays 12 to 16, fin pointed to rounded. Ventrals close together, inserted well behind pectorals.

Indo-Pacific region, some in fresh water, where they exhibit great variation in color markings. All are fishes of small or moderate size.

Several names, *Therapon ater* Kent,[25] *T. cavifrons* Kent[25] and *T. maculosus* Kent[25] are unidentifiable names.

Although Ogilby and McCulloch include[26] *Datnia* Cuvier[27] as a synonym of *Terapon*, its type by the principle of tautonymy is surely *Coius datnia* Buchanan-Hamilton, thus invalidating Bleeker's designation of *Datnia argentea* Cuvier.[28] *Datnia* Cuvier thus properly belongs with the sparoids as a synonym of *Sparus* Linnaeus.

I do not accept Jordan's statement under *Coius*[29] that its logotype is "*Coius polota* Ham., as restricted by Fowler, 1905. This designation of type prior to that of Jordan, 1917." In 1905 I did not formally designate a genotype for *Coius* Buchanan-Hamilton and therefore Jordan's designation of *Coius cobojus* Buchanan-Hamilton=*Perca scandens* Daldorf will hold and *Coius* becomes a synonym of *Anabas*.

ANALYSIS OF SPECIES

a^1. Lower opercular spine greatly developed, produced beyond opercular lobe; spinous dorsal with large black blotch; oblique dark bands on caudal.
  b^1. TERAPON. Scales larger, 8 above lateral line; median dark lateral band axial, at least on head and caudal fin.
    c^1. Depth less than head length; axial dark band straight, also second dark parallel straight band above, besides another below .... **puta.**
    c^2. Depth slightly greater than head; dark lateral band bent little below axis in median part of its course; second and third dark bands above parallel or similarly curved .... **jarbua.**
  b^2. EUTHERAPON. Scales smaller, 13 to 15 above lateral line; median dark band from eye to caudal peduncle above and then out over superomedian caudal rays; below parallel band from pectoral axil and another on back .... **theraps.**

---

[25] Great Barrier Reef, 1893, p. 369. Queensland.

[26] Mem. Queensland Mus., vol. 5, 1916, p. 99.

[27] Règne Animal, vol. 2, ed. 2, 1829, p. 148.

[28] Arch. Néerland. Sci. Nat. Harlem, vol. 11, 1876, p. 267.

[29] Genera of Fishes, pt. 2, 1919, p. 172.

a^2. Lower opercular spine smaller, reaches little beyond opercle lobe; no dark blotch on spinous dorsal; no oblique dark bands on caudal.

d^1. Mesopristes. Suprascapula exposed, not hidden by scales.

e^1. Dorsal spines normally 13.

f^1. Head smaller, less than ⅓ of length to hypural; nearly uniform, no horizontal dark bands.

g^1. Scales smaller, 58 to 68 along below lateral line, 63 to 67 along above ---------- **hilli.**

g^2. Scales larger, 48 to 56 along below lateral line, 51 to 61 along above.

h^1. Head 3 to 3½; base of each scale on back with dark spot ---------- **parviceps.**

h^2. Head 2⅗ to 2¾; obscure dark spots size of pupil all over body ---------- **kneri.**

f^2. Head larger, ⅓ or over in length to hypural; 7 dark parallel horizontal bands, also some dark spots or short dark bars at caudal base ---------- **micracanthus.**

e^2. Dorsal spines usually 12.

i^1. Scales smaller, 75 to 90 in lateral line.

j^1. Nostrils close together; nearly uniform ---------- **bidyana.**

j^2. Nostrils widely separated; dark shoulder mark and dark cross bars on body, also fins spotted ---------- **humeralis.**

i^2. Scales larger, less than 60 in lateral line.

k^1. Dorsal and anal spines very strong, longest of dorsal longer than rays and second anal spine much longer than third.

l^1. Nostrils close together; maxillary largely covered by lip.

m^1. Seven black blotches on back and 2 rows of broken dark blotches ---------- **cancellatus.**

m^2. Similar, only markings all pale or dull gray ---------- **rosenbergii.**

l^2. Nostrils well separated, maxillary angle not covered by lip.

n^1. Caudal emarginate.

o^1. Preorbital serrate; dorsal rays 10.

p^1. Eye 1⅓ to 1⅔ in snout; upper profile concave with age ---------- **argenteus.**

p^2. Eye subequal with snout; upper profile slightly convex ---------- **lambertoni.**

o^2. Preorbital not serrate; dorsal rays 13 ---------- **alligatoris.**

n^2. Caudal truncate; eye 1⅕ in snout; preorbital serrate; dorsal rays 10 ---------- **elongatus.**

k^2. Dorsal and anal spines weaker, longest of dorsal not longer than rays and second anal spine not or but little longer than third.

q^1. Caudal slightly rounded; anal rays 11 ---------- **carbo.**

q^2. Caudal emarginate; anal rays 8 to 10.

r^1. Scales 46 to 50 along below lateral line ---------- **fuliginosus.**

r^2. Scales 51 or 52 along below lateral line ---------- **bancrofti.**

d^2. Leiopotherapon, new subgenus. Suprascapula not exposed, hidden by scales.

s^1. Dorsal spines 13.

t^1. Scales 33 to 38; 5 narrow dark cross bars------------------**percoides.**

t^2. Scales 52 to 56; caudal with broad oblique bar on each lobe--------- **caudavittatus.**

s^2. Dorsal spines 12, rarely 11 or 13; nearly uniform or with small dark spots.

u^1. Lower gill rakers 11 or 12------- **unicolor.**

u^2. Lower gill rakers 18 or 19------- **plumbeus.**

Subgenus Terapon Cuvier

Lower opercular spines greatly developed, produced beyond opercular lobe. Scales large, 8 above lateral line; spinous dorsal with large black blotch; oblique dark bars on caudal; median dark lateral band axial, at least on head and caudal fin.

TERAPON PUTA Cuvier

Therapon puta Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 131. Pondicherry; Mahé; Règne Animal, ed. 2, vol. 2, 1829, p. 148 (on "*Puta* Russell"= *Keelputa* Russell, Fishes of Coromandel, vol. 2, 1803, p. 19, Vizagapatam).—Griffith, Animal Kingdom Cuvier, vol. 10, 1834, pl. 15, fig. 1.—Valenciennes, Règne Animal Cuvier, Ill. Poiss., 1839, pl. 12, fig. 2.—Guérin, Iconogr. Règne Animal, Poiss., vol. 1, 1829–1844, pl. 7, fig. 1.—Jerdon, Madras Journ. Lit. Sci., vol. 17, 1853. p. 130.—Day, Fishes of India, pt. 1, 1875, p. 68, pl. 18, fig. 3.—Klunzinger, Fische Roth. Meer., 1884, p. 26.—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 505.—Steindachner, Abh. Senckenberg. Ges., vol. 25, 1900, p. 417 (Ternate).—Johnstone, Rep. Ceylon Pearl Oyster Fisher. Gulf of Manaar, pt. 21, 1904, p. 221 (off Aripu).—Pellegrin, Bull. Soc. Zool. France, vol. 30. 1905, p. 84 (Baie d'Along, Tonkin).—Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 130 (Kalansiye, Sokotra; Gischin and Scheich Othman, South Arabia).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 258 (Iloilo and Manila).—Seale, Philippine Journ. Sci., vol. 5, No. 4, Oct. 1910, p. 277 (Sandakan).—Bean and Weed, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 605 (Batavia).—Beaufort, Bijd. Dierk., Amsterdam, vol. 19, 1913, p. 118 (Majalibit Bay, Waigiu).—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran).—Weber, Siloga Exp., vol. 57, Fische, 1913, p. 256 (Noimini Bay, South Timor).—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 103 (Manila; type of *Autisthes argenteus*).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 450 (Ceylon).—Hornell, Madras Fisher. Bull., vol. 11, 1917, p. 91.—Fowler, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).—Chaudhuri, Mem. Indian Mus., vol. 5, No. 2, April, 1923, p. 720 (Barnikuda, Cherriakuda, Mahosa, Rambha Bay, Samal Island, Satpara. Sruanaddi).—Pearson, Ceylon Administr. Report, 1925, p. F14; 1926, pp. F27, F29.—Vinciguerra, Ann. Mus. Civico Stor.

Nat. Genova, series 3, vol. 10, 1926, p. 585 (Sarawak).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 281 (Orani and Orion); Mem. Bishop Mus., vol. 10, 1928, p. 211 (compiled); Journ. Bombay Nat. Hist. Soc., 1928, p. 113 (Bombay; Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 642 (Bacon).

Therapon (*Datnia*) *puta* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 112 (Singapore, Bintang, Banka, Java, Celebes); vol. 8, 1876–1877, pl. (62)340, fig. 2.

Terapon puta Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 24 (Manila and Cavite).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (Bulan, Bacon, San Fabian).

Therapon ghebul (Ehrenberg) Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 133. Red Sea.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 281 (copied).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 728 (Koseir, Red Sea).

Coius trivittatus Buchanan-Hamilton, Fishes of Ganges, 1822, pp. 92, 370. Ganges mouths.

Therapon trivittatus Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1001 (sea of Pinang, Singapore, Malayan Peninsula).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 280 (India, Ceylon, Singapore, Moluccas).—Schmeltz, Cat. Mus. Godeffroy, No. 1, 1864, p. 8 (South Sea).—Kner, Reise Novara, Fische, 1865, p. 45 (Java).—Day, Proc. Zool. Soc. London, 1865, p 13 (Cochin, Malabar).—Day, Fishes of Malabar, 1865, p. 7.—Playfair, Fishes of Zanzibar, 1866, p. 22 (Zanzibar).—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Manila).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 361 (Torres Straits).—De Vis, Proc. Linn. Soc. New South Wales, vol. 8, 1884, p. 457 (New Britain).

Therapon (*Datnia*) *trivittatus* Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (62)340, fig. 2.

Autisthes argenteus De Vis, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 398. Queensland Coast.

Depth 3 to 3⅔; head 2⅞ to 3¼, width 1⅘ to 2⅖. Snout 2⅞ to 3⅖ in head; eye 3 to 3⅕, 1 to 1⅓ in snout, greater than interorbital in young to equal with age; maxillary reaches opposite eye in young, to hind nostril with age, expansion 2 to 2¼ in eye, length 3 to 3⅛ in head; teeth simple, conic, in villiform bands in jaws, outer row little enlarged, none on palate or tongue; interorbital 4 to 4½, broadly convex; preopercle with lower edge finely denticulate, few denticles around angle at margin, of which at least 3 to 6 enlarged and median ½ of eye; lower preorbital edge rough; opercular spine ½ of eye. Gill rakers 9+20, lanceolate, subequal with gill filaments or ½ in eye.

Scales 80 in lateral line to caudal base and 8 more on latter; 12 scales above lateral line, 24 below, 19 or 20 predorsal to occiput, 6 rows on cheek to preopercle ridge. Scales with 8 or 9 basal radiating striae; apical denticles 10 to 12, with 2 or 3 transverse series of basal elements; circuli fine.

D. XII, 10, I, fifth spine 1½ to 1⅗ in head, first ray 1⅚ to 2⅒; A. III, 8, I, third spine 2⅕ to 2¼, first ray 1¾ to 2; caudal 1⅓ to

$1\frac{2}{5}$, emarginate; least depth of caudal peduncle 3 to $3\frac{1}{10}$; pectoral $1\frac{1}{2}$ to $1\frac{3}{5}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$.

Back pale brown, below whitish. Iris whitish. Dark brown band begins over nostrils, runs over eye to bases of last dorsal rays; second band from snout tip to eye and then along median body axis to caudal medianly to its hind edge. Dark or reddish band horizontally across each caudal lobe medianly. Spinous dorsal pale or whitish, with large black area over highest portion. Soft dorsal pale, with dusky apical margin. Other fins pale, lower whitish. Anal sometimes with dusky median area.

Red Sea, Arabia, Zanzibar, Seychelles, India, Ceylon, Singapore, East Indies, Philippines, Tonkin, Queensland.

20141. Bacoor, Luzon. June 15, 1908. Length 76 mm.

18211. Manila market. December 12, 1908. Length 103 mm. Broad black stripe from eye to end of caudal; another above, from upper opercle angle to hind edge of soft dorsal. Short faint line along spinous dorsal base, appears as black margin to soft dorsal. Large jet black spot of spinous dorsal surrounded by white. Anal dusky, edge white. Oblique black stripe on each caudal lobe and tip of upper lobe with horizontal black spot.

6921 to 6924. Tacloban market. July 25, 1909. Length 124 to 147 mm.

32711 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 144 mm.

56128 U.S.N.M. San Fabian. Bureau of Fisheries (3738). Length 123 mm.

56274 U.S.N.M. Bulan. Bureau of Fisheries. Length 46 to 70 mm.

72250 U.S.N.M. Iloilo. R. C. McGregor. Length 106 mm.

72665 U.S.N.M. Java. Bryant and Palmer. Length 119 to 128 mm. 2 examples.

TERAPON JARBUA (Forskål)

Sciaena jarbua Forskål, Descript. Animal., 1775, pp. xii, 50. Djedda, Red Sea.—Bonnaterre, Tabl. Ichth., 1788, p. 123 (Red Sea).—Gmelin, Syst. Nat. Linn., vol. 1, 1789, p. 1303 (Arabia).—Walbaum, Artedi Pisc., vol. 3, 1792, p. 318 (on Forskål).—Shaw, General Zool., vol. 4, 1803, p. 541 (Arabian Seas).

Holocentrus jarbua Lacépède, Hist. Nat. Poiss., vol. 3, 1802, pl. 30, fig. 3; vol. 4, 1802, pp. 329, 348 (on Forskål).

Therapon jaruba Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 729 (Koseir, Red Sea).—Day, Fishes of India, pt. 1, 1875, p. 69, pl. 18, fig. 4.—Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 437 (Mauritius; Seychelles).—Klunzinger, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 349 (Port Darwin, Port Denison, Endeavor River); Fische Roth. Meer., 1884, p. 26.—Boulenger, Proc. Zool. Soc. London, 1887, p. 656 (Muscat).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 505, fig. 153.—Weber, Zool. Ergebn., Reise Nederland. Ost Ind., vol. 3, 1894, p. 407 (Tanette River mouth, Celebes; Kupang and Koinimo River, Timor); Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 262 (Ambon).—Rutter, Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 75 (Swatow, China).—Steindachner, Abh. Senckenberg. Ges., vol. 25, 1900, p. 417 (Ternate; Baram River, Borneo).—Jordan and Evermann, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 348 (Formosa).—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Kuala Puhang).—Borsieri, Anal. Mus. Civ. Stor. Nat. Genova, vol. 41, 1904, p. 195 (Massaua and Daalac Island, Red Sea).—Fowler, Journ.

Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527 (Padang).—Pellegrin, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).—Regan, Trans. Linn. Soc. London, ser. 2, vol. 12, 1905, Zool., p. 254. (Seychelles).—Steindachner, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 71, pt. 1, 1907, p. 129 (Tamarida and Kor Garrieh, Sokotra).—Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 13, 1907, p. 203 (Madagascar).—Lloyd, Rec. Indian Mus., vol. 1, 1907, p. 226 (Akyab).—Weber, Nova Guinea, vol. 5, pt. 2, 1908, p. 249 (Merauke River mouth).—Regan, Trans. Linn. Soc. London, series 2, vol. 12, Zool., May 1908, p. 254 (Seychelles).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 258 (Manila, Calayan, Ticao).—Gilchrist and Thompson, Ann. South Afric. Mus., vol. 6, 1908–1911, p. 150 (Durban, Natal).—Seale, Philippine Journ. Sci., vol. 5, No. 4, October 1910, p. 277 (Sandakan, Borneo).—Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 289 (Suva, Vavau, Tongatabu).—Bean and Weed, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 605 (Welcome Bay, Bantam; Batavia).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 538 (Arabia).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 118 (Kairatu, West Ceram; Batu merak, Ambon).—Sewell, Journ. Proc. Asiat. Soc. Bengal, new ser., vol. 9, 1913, p. 344 (Fisher Bay, Tavoy Island).—Zugmayer, Abhandl. K. Bayer. Akad. Wiss., Math.-physik. Klasse, vol. 26, 1913, p. 10 (Mekran; Oman).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 254, fig. 64, No. 5 (Kangeang Island; Bima; Macassar; Dongala, Celebes; Kawa, West Ceram; Saleyer: Feer, High Key; Roma Island; South coast of Timor).—Cockerell, Mem. Queensland Mus., vol. 2, 1913, p. 56 (Queensland).—Weber, Nova Guinea, vol. 9, pt. 4, 1913, p. 582 (Mbai River at Selså).—Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 224 (Fort Dauphin).—Seale, Philippine Journ. Sci., vol. 9, No. 1, 1914, p. 67 (Hong

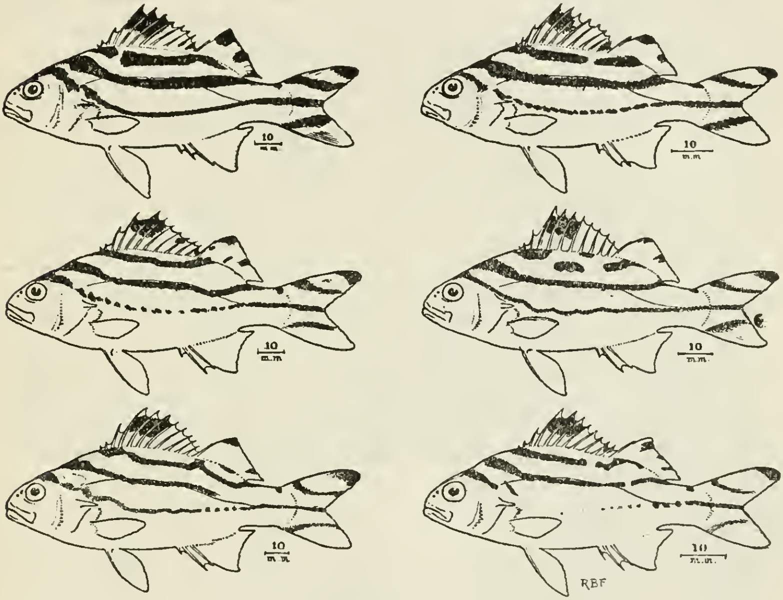

Figure 25.—Terapon jarbua (Forskål). Variation of color markings

Kong).—Boulenger, Cat. Fresh Water Fish. Africa, vol. 3, 1915, p. 113, fig. 86 (Red Sea; Abd-el-Kuri; Mombasa; Zanzibar; Rovuma River; Zambesi River mouth; Durban, Natal).—Pearson, Ceylon Administr. Report, 1915–18, p. F14.—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 450 (Ceylon).—Hornell, Madras Fisher. Bull., No. 11, 1917, p. 91.—Fowler, Copeia, No. 58, June 18, 1918, p. 63 (Philippines).—Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 32 (Takao).—Chaudhuri, Mem. Indian Mus., vol. 5, No. 2, April 1923, p. 719 (Satpara).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 232 (Delagoa Bay).—Vinciguerra, Ann. Mus. Civico Stor. Nat. Genova, series 3, vol. 10, 1926, p. 586 (Sarawak).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 281 (San Fernando, Santa Maria, Vigan, Orani, Orion, Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 211 (Fiji, Samoa, "Hawaii," New Guinea, Port Moresby, Apia, Suva, Shortland, Tonga, Vavau); Journ. Bombay Nat. Hist. Soc., vol. 33, No. 1, 1929, p. 113 (Bombay); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 609 (Hong Kong), p. 642 (Padang).

Therapon (*Datnia*) *jarbua* Bleeker, Atlas Ichth. Ind. Néerland, vol. 7, 1873–1876, p. 112 (Sumatra, Nias, Batu, Pinang, Singapore, Bintang, Banka, Biliton, Lepar, Natuna, Java, Duizend Islands, Bawean, Bali, Borneo, Celebes, Timor, Ternate, Batjan, Obi Major, Ceram, Amboina, Goram).

Terapon jarbua Jordan and Seale, Proc. U. S. Nat. Mus., vol. 28, 1905, p. 781 (Negros); Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 266 (Vaisigano River mouth, Samoa); vol. 26, 1906 (1907), p. 23 (Cavite).—Stead, Proc. Linn. Soc. New South Wales, vol. 31, 1906, p. 174 (Lake Macquarie).—Smith and Seale, Proc. Biol. Soc. Washington, vol. 19, 1906, p. 78 (Mindanao).—Evermann and Seale, Proc. U. S. Nat. Mus., vol. 31, 1906, p. 507 (Manila); Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (Bulan and San Fabian).—Smith and Pope, Proc. U. S. Nat. Mus., vol. 31, 1907, p. 476 (Kochi).—Jordan and Starks, Proc. U. S. Nat. Mus., vol. 32, 1907, p. 495 (Okinawa).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).—Jordan and Richardson, Mem. Carnegie Mus., vol. 14, No. 4, 1909, p. 187 (Takao).

Therapon jerbua Sewell, Journ. Proc. Asiat. Soc. Bengal, new ser., vol. 9, 1913, p. 334 (Hinge Basin).

Holocentrus servus Bloch, Naturg. Ausländ. Fische, vol. 4, 1790, p. 80, pl. 238, fig. 1. Japan.—Walbaum, Artedi Pisc., vol. 3, 1792, p. 641 (on Bloch).—Forster, Fauna Indica, 1795, p. 16.

Grammistes servus Schneider, Syst. Ichth. Bloch, 1801, p. 185 (Japan).

Therapon servus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 125 (Seychelles, Timor, Pondicherry, Moluccas, Malabar).—Valenciennes, Hist. Nat. Poiss., vol. 7, 1831, p. 479 (Seychelles, Bombay).—Rüppell, Neue Wirbelth., Fische, 1835, p. 95 (Red Sea).—Richardson, Ann. Mag. Nat. Hist., vol. 9, 1842, p. 126 (Port Essington); Ichth. China Japan, 1846, p. 238 (Chinese Sea).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 270 (Port Essington, Cape York, Amboina, Moluccas, China, Madras, Ceylon, Red Sea, Cape Seas, India).—Schmeltz, Cat. Mus. Godeffroy, No. 1, 1864, p. 8 (South Seas).—Kner, Reise Novara, Fische, 1865, p. 45 (Madras, Ceylon).—Day, Proc. Zool. Soc. London, 1865, p. 13 (Cochin, Malabar); Fishes of Malabar, 1865, p. 18.—Martens, Verh. zool. bot. Ges. Wien, vol. 16, 1866, p. 378 (Abu-Amameh harbor, Red Sea).—Playfair, Fishes of Zanzibar, 1866, p. 22 (Aden; Zanzibar).—Schmeltz, Cat. Mus. Godeffroy, No. 3, 1866, p. 7 (Samoa).—Steindachner, Sitz. Ber. Akad. Wiss. Wien, vol. 56, pt. 1, 1867,

p. 310 (Cape York, Australia).—Peters, Reise Mossambique, vol. 4, 1868, p. 10.—Martens, Reis. Ost Afrika von der Decken, vol. 3, pt. 1, 1869, p. 141 (Kilimane River).—Day, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (34) 312, fig. 2.—Günther, Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 26 (Apia; Fiji).—Schmeltz, Cat. Mus. Godeffroy, No. 5, 1874, p. 23 (Bowen, Australia).—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Bangkok; Muntok, Banka; Kajoa, Moluccas).—Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1877, p. 270 (Cape York; Hall Sound, New Guinea).—Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. 370 (Port Jackson).—Macleay, Proc. Linn. Soc. New South Wales, vol. 2, 1877, p. 348 (Port Darwin).—Jouan, Mém. Soc. Sci. Nat. Cherbourg, vol. 5, ser. 2, 1879, p. 106 (Seychelles).—Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1879, p. 350 (Port Jackson).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (South Sea; Bowen).—Günther, Rep. Voy. Challenger, vol. 1, 1880, p. 39 (Somerset).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—Sauvage, Bull. Soc. Philom., Paris, ser. 7, vol. 5, 1881, p. 105 (Swatow, China).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 361 (north and northeast coasts of Australia).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Bowen), p. 44 (Zanzibar).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Manado, Celebes; Manila Bay, Luzon, Cebu; Rubi, New Guinea).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Manila Bay; Samar; Mindanao).—Vinciguerra, Lo Spallanzani Giorn. Romano Scienz. Biolog., ser. 2, vol. 19, 1890, p. 485 (Zanzibar).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 472 (Luzon, Manila Bay, Samar, Mindanao).—Ishikawa and Matsuura, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 55.—Regan, Ann. Natal Gov. Mus., vol. 1, 1908, p. 244 (Durban Bay).—Franz, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 46 (Fukuura).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 536, fig. 1 (Kagoshima, Izu, Miyakojima, Formosa, Swatow, Samoa, Australia, Arabia, Manila, Cavite, San Fabian, Sumatra).—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 104 (Mapoon, Darnley Island, Edgecombe Bay, Hervey Bay, Great Sandy Strait, Moreton Bay, Brisbane River, Nerang Creek, Port Darwin; West Australia).—McCulloch, Biol. Res. Endeavour, vol. 4, pt. 4, 1916, p. 182 (Bowen).—Tirant, Service Océanogr. Pêches Indo Chine, 6 ° Note, 1929, p. 168 (Hué).

Terapon servus Guichenot, Mém. Soc. Sci. Nat. Cherbourg, vol. 2, ser. 2, 1866, p. 145 (Madagascar).

Terapon timoriensis Quoy and Gaimard, Voy. Uranie, Zool., Jan. 26–May 26, 1925, p. 341. Coupang.

Pterapon trivittatus (not Buchanan-Hamilton) Gray, Illustrations Indian Zool., vol. 2, 1833–1834, pl. 88, fig. 1 (evidently copied from pl. No. 67 Buchanan's-Hamilton's MS.)

Therapon trivittatus Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1001 (Pinang, Singapore, Malay Peninsula).—Peters, Monatsb. Akad. Wiss. Berlin, 1868, p. 256 (Singapore).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 472 (Luzon, Manila Bay).

Therapon bounzetianus Hombron and Jacquinot, Voy. Astrolabe, Zool., vol. 3, 1853, p. 43, pl. 4, fig. 2. No locality.

Therapon? gerager Thiollière, Fauna Woodlark, 1857, p. 147. Woodlark Island.

Johnius gerager (Montrouzier) Thiollière, Fauna Woodlark, 1857, p. 147 (name in synonymy).

Perca cincta GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 279. India. (Name in text.)

Holocentrus katkaya (BUCHANAN-HAMILTON) CHAUDHURI, Mem. Indian Mus., vol. 5, No. 2, April, 1923, p. 720 (MS name on pl. No. 67 of BUCHANAN-HAMILTON, also of GRAY, pl. 88, fig. 1).

Depth 2⅘ to 3¼; head 3 to 3¼, width 1¾ to 1⅚. Snout 3 to 3¼ in head; eye 4⅓ to 4⅖, 1¼ in snout, 1¼ in interorbital; maxillary reaches ⅕ to ¼ in eye, expansion 1⅘ to 2 in eye, length 2½ to 2⅗ in head; bands of villiform teeth in jaws, outer row little enlarged, conic; small transverse band of villiform teeth on vomer, none on palatines; interorbital 3½ to 3¾, broad, flattened; preorbital finely serrated; preopercle edge with 25 denticles, well developed at lower corner. Gill rakers 6+13, compressed, short, ⅗ of gill filaments.

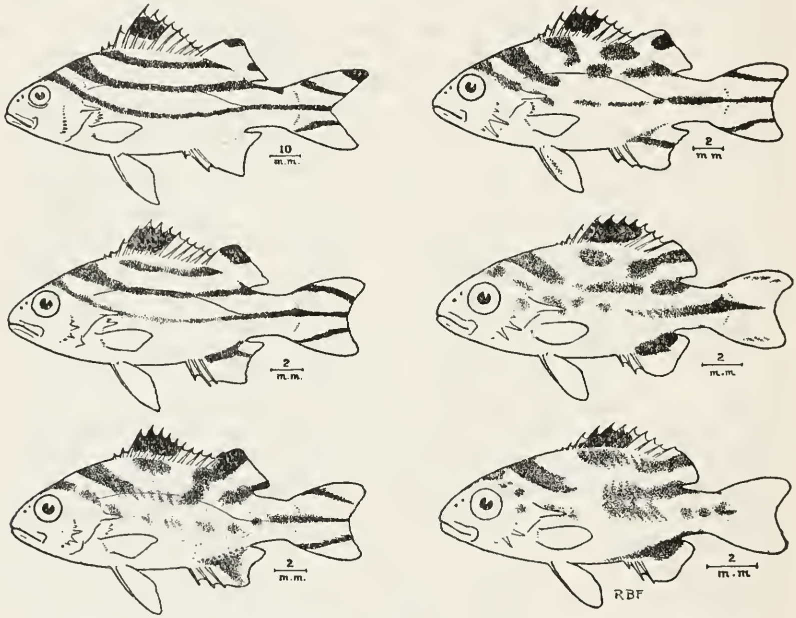

FIGURE 26.—TERAPON JARBUA (FORSKÅL). VARIATION OF COLOR MARKINGS

Scales 76 to 78 in lateral line to caudal base and 6 more on latter; 15 or 16 scales above lateral line, 23 to 25 below, 20 to 25 predorsal, 6 or 7 rows on cheek. Suprascapula finely denticulate. Scales with 10 to 13 slightly radiating basal striae; apical denticles 15 to 21, with 2 to 4 transverse series of basal elements; circuli fine.

D. XI, I, 10, i, fourth dorsal spine 1½ to 2 in head, first ray 2⅛ to 2⅓; A. III, 8, i, third spine 2⅞ to 3½, first ray 1⅞ to 2; caudal 1 to 1⅛, emarginate; least depth of caudal peduncle 2¾ to 3; pectoral 1¾ to 1⅘; ventral 1⅖ to 1⅗.

Back brown, sides paler and below whitish. Three dusky brown horizontal bands of which uppermost from spinous dorsal origin to middle of soft dorsal base; second from predorsal to upper surface of caudal peduncle; third from suprascapula, arches down little below medial axial line to caudal peduncle medially and then out over middle of tail. Whole side with more or less silvery white reflections. Iris pale brown. Fins all with pale ground color. Spinous dorsal with greater upper portion of third and fourth membranes blackish. Soft dorsal with black spot at apex and another medially to apex. Caudal with tip of upper lobe blackish, also very slightly inclined blackish band on each lobe medially.

Red Sea, Arabia, Zanzibar, Mozambique, Delagoa Bay, Natal, Mauritius, Madagascar, Seychelles, India, Ceylon, Malacca, Pinang, Singapore, East Indies, Philippines, Tonkin, China, Riu Kiu, Japan, Queensland, West Australia, New South Wales, Melanesia, Polynesia. The best known species of the genus, very variable, though the three blackish or dark longitudinal bands bowed downward most characteristic in color pattern. The variations are very extensive with age. In small examples often the uppermost dark band very variable, sometimes broken as 2 dark blotches, again as loop, or even interrupted variably, often asymmetrical on both sides of body.

21082. Abuyog, Leyte. July 26, 1909. Length 158 mm.

5483. Basud River, Luzon. June 15, 1909. Length 150 mm.

20064. Batangas Bay. June 7, 1908. Length 128 mm.

5957[745], 5959[750]. 12075. Cavite market. December 1. 1908. Length 99 to 177 mm.

5349. Cebu market. April 4, 1908. Length 235 mm.

7539, 12881. Cotabato, Mindanao. May 20, 1908. Length 100 to 150 mm.

19708. Davao, Gulf of Davao. May 16, 1908. Length 80 mm.

20581. East side Tagbilaran Channel. April 9. 1908. Length 108 mm.

20607. Estero, Sablayan Bay, Mindoro. December 13, 1908. Length 113 mm.

6032. Hinunangan Beach, Leyte. July 30, 1909. Length 143 mm.

6636. Iloilo market, Panay. March 28, 1908. Length 120 mm.

19281. Inamucan Bay, Mindanao. August 9, 1909. Length 172 mm.

4856. Jolo market. February 11, 1908. Length 236 mm.

17553. Langao Point, southern Luzon. June 24. 1909. Length 130 mm.

4515, 20166. Manila Bay, Luzon. December 9, 1907. Length 112 to 113 mm. Brassy with 3 blackish brown longitudinal stripes. Dorsal spots black, greenish where color thin; spines, especially last, bright pearly blue. Caudal stripes greenish brown on whitish background. Anal zone orange, with dusky. Ventral rays orange, membranes plain, produced rays milky. Called "Ma-ga-ong" and "Bugaong."

19895. Manila Harbor. December 30, 1907. Length 84 mm. Silvery, with greenish iridescence above. Longitudinal markings black, paling to brown below. Black dorsal blotch, tips of third to seventh spines white, spines and membranes in emargination brown, blotches of soft dorsals brown. Ventral and anal light brown, except spines and tips of first 4 rays. Lower caudal tip white. Pectoral colorless, except dusky inside and near axil.

19351, 20491. Mahinog, Camiguin Island. August 3, 1909. Length 101 to 131 mm.

6134, 11773. Mansalay. June 4, 1908. Length 212 to 213 mm.

22016. Mariveles Bay, Manila Bay. January 27, 1909. Length 42 mm.

10784, 13881. Matnog Bay. May 31, 1909. Length 180 to 182 mm.

16514, 16515. Murcielagos Bay, Mindanao. August 9, 1909. Length 55 to 62 mm.

7718. Nakoda Bay. December 30, 1908. Length 227 mm.

20353. Nasugbu Bay, Luzon. January 16, 1908. Length 92 mm.

9639. Nato River, Luzon. June 18, 1909. Length 147 mm.

11932. Nonucan River, Mindanao. August 6, 1909. Length 132 mm.

13948, 19569, 20813, 20814. Paluan Bay, Mindoro. December 11, 1908. Length 112 to 185 mm.

5007. Panabutan Bay, west Mindanao. February 6, 1908. Length 154 mm.

17230, 17231, 19315, 19520, 21806, 22315, 22316. Pandanon Island, between Cebu and Bohol. March 24, 1909. Length 88 to 178 mm.

20992. Parang Parong, Mindanao. May 23, 1908. Length 146 mm.

20966. Port Matalvi. No date. Length 60 mm.

19417. Sorsogon. March 12, 1909. Length 146 mm.

5448 to 5460. Subig Bay, southern Luzon. January 7, 1908. Length 79 to 118 mm.

7479. Tataan, Simulac Island, Tawi Tawi Group. February 20, 1908. Length 222 mm.

20558. Tilig, southern Luzon. July 14, 1908. Length 117 mm.

17194 to 17197. Verde del Sur Island, eastern Palawan. April 6, 1909. Length 184 to 220 mm.

11473. Kowloon, China. September 8, 1908. Length 128 mm.

One hundred and thirty-eight examples. Kowloor, China. September 14, 1908. By electric light. Length 14 to 33 mm.

Three examples (with 6536 U.S.N.M.). Hong Kong, China. William Stimpson. Length 102 to 113 mm.

12640 U.S.N.M. Zanzibar. British Museum. Length 68 to 121 mm. 2 examples. As *Therapon servus.*

28541 U.S.N.M. Sumatra. Mus. Hist. Nat. Paris. Length 103 mm. As *Therapon servus.*

30664 U.S.N.M. New Guinea. Australian Museum. Length 55 to 58 mm. 2 examples.

32714 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 143 mm.

41552 U.S.N.M. Samoa. Dr. C. H. White. Length 183 mm.

42006 U.S.N.M. Queensland. Australian Museum. Length 214 mm.

47794 U.S.N.M. New Guinea. Australian Museum. Length 130 mm.

47834 U.S.N.M. Lord Howe Island. Australian Museum. Length 226 mm.

49328 U.S.N.M. Red Sea. Bellotti. Length 115 to 132 mm. 2 examples. As *Therapon servus.*

51966 U.S.N.M. Negros, Philippines. 1901. Dr. B. Dean. Length 141 mm.

52342 U.S.N.M. Apia, Samoa. Bureau of Fisheries. Length 42 to 265 m. 4 examples.

55605 U.S.N.M. Manila. Dr. E. A. Mearns. Length 69 to 93 mm. 3 examples.

56013 U.S.N.M. Bulan, Philippines. Bureau of Fisheries (4221). Length 98 mm.

56028 U.S.N.M. Bulan. Bureau of Fisheries (4105). Length 187 mm.

56333 U.S.N.M. Manila. Dr. G. A. Lung. Length 97 to 203 mm. 3 examples.

57933 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 118 to 28 mm. 4 examples.

57934 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 38 mm.

57976 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 15 to 210 mm. 9 examples.

59003 U.S.N.M. San Fabian. Bureau of Fisheries (3262). Length 192 mm.

59808 U.S.N.M. Kochi, Japan. Dr. H. M. Smith. Length 77 mm.

66060 U.S.N.M. Suva, Fiji. Bureau of Fisheries. Length 81 to 217 mm. 6 examples.

72011 U.S.N.M. Okinawa, Riu Kiu. *Albatross* Collections. Length 283 mm.

72012 U.S.N.M. Okinawa. *Albatross* Collection. Length 156 mm.

72219 U.S.N.M. Calayan, Philippines. R. C. McGregor. Length 121 mm.

72200 U.S.N.M. Southern Negros. R. C. McGregor. Length 62 mm.

72236 U.S.N.M. Ticao, Philippines. R. C. McGregor. Length 20 to 26 mm. 2 examples.

72666 U.S.N.M. Java. Bryant and Palmer. Length 138 mm.

75449 U.S.N.M. Kagoshima, Japan. Jordan and Snyder. Length 117 to 235 mm. 2 examples. As *Therapon servus.*

82101 U.S.N.M. Samarang, Java. W. L. Brind. Length 25 to 38 mm. 2 examples.

85482 U.S.N.M. Formosa. Dr. F. Baker. Length 253 mm.

27611, 27612 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 127 to 227 mm. When fresh in arrack silvery, upper parts pale brown, lower surfaces silvery white. Just below dorsal broad deep brown band on side of back, another from nape along caudal peduncle above where joining former, continued out on caudal to its edge. Two indistinct or ill defined bands from opercle along middle and lower part of side, first persists out across middle of caudal to its edges and other out over lower caudal lobe to its edge. Dorsal and anal whitish, spinous part of former with upper ⅔ of fin with 3 large deep brown blotches and soft part with 3 smaller evenly distributed marginal edges. Tips of caudal lobes with deep brown blotch, lower not marginal. Pectoral dusky. Ventral tinted yellowish.

Subgenus EUTHERAPON Fowler

Lower opercular spines greatly developed, produced beyond opercular lobe. Scales small, 13 to 16 above lateral line. Spinous dorsal with large black blotch; oblique dark bars on caudal; median dark band from eye to caudal peduncle above, then out over superomedian caudal rays; below parallel band from pectoral axil, another on back.

TERAPON THERAPS Cuvier

Therapon theraps Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 129, pl. 53. Java, Mahé.—Rüppell, Neue Wirbelth., Fische, 1835, p. 95 (Red Sea).—Richardson, Ann. Mag. Nat. Hist., vol. 9, 1842, p. 126 (Port Essington).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 274 (India, East Indies, Malacca, China, False Bay, Philippines).—Schmeltz, Cat. Mus. Godeffroy, No. 1, 1864, p. 8 (East Indies); No. 2, 1865, p. 6 (East Indies).—Day, Proc. Zool. Soc. London, 1865, p. 13 (Cochin, Malabar); Fishes of Malabar, 1865, p. 19.—Kner, Reise Novara, Fische, 1865, p. 44 (Singapore).—Playfair, Fishes of Zanzibar, 1866, p. 22 (Zanzibar).—Day, Proc. Zool. Soc. London, 1870, p. 683 (Andamans).—Klunzinger, Verh. zool. bot. Ges. Wien, vol. 20, 1870, p. 728 (Koseir, Red Sea).—Castelnau, Proc. Zool. Acclimat. Soc. Victoria, vol. 2, 1873, p. 83 (Port Darwin).—Günther, Journ. Mus. Godeffroy, vols. 2–3, pts. 5–6, 1874, p. 26 (Yap).—Schmeltz, Cat. Mus. Godeffroy, No. 5, 1874, p. 22 (East Indies).—Day, Fishes of India, pt. 1, 1875, p. 70, pl. 18, fig. 6.—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (South China Sea; Muntok, Banka; Anjer, Java).—Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876, p. 270 (Palm Islands and Flinders Island).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (43) 321, fig. 1.—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (East Indies).—Günther, Rep. Voy. Challenger, vol. 1, 1880, p. 52 (Philippines).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 360 (Rockingham Bay, Queensland).—Klunzinger, Fische Roth. Meer., 1884, p. 26.—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (East Indies), p. 44 (Zanzibar).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Manado, Celebes).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Manila Bay; Cebu).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 506.—Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 472 (Luzon, Manila, Cebu).—Duncker, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Singapore).—Borsieri, Anal. Mus. Civ. Stor. Nat. Genova, vol. 41, 1904, p. 194 (Massaua and Rig Rig on Daalac Island, Red Sea).—Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. 527 (Padang).—Weber, Siboga Exp., vol. 57, Fische, 1913, p. 255, fig. 64. 1–4 (Kangeang Island; Bali Sea; Macassar; Buton Strait; Dobo, Aru Islands; Jedan Island, Aru Group; Noimini Bay, South Timor; Buka or Cyrus Bay, Rotti); Nova Guinea, vol. 9, pt. 4, 1913, p. 582 (Mimika River mouth).—Seale, Philippine Journ. Sci. vol. 9, No. 1, 1914, p. 67 (Hong Kong).—Pearson, Ceylon Administr. Report, 195–18, p. F14.—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 102 (Burnett River and Yam Creek, Queensland, Torres Strait; India).—McCulloch, Biol. Res. Endeavour, vol. 4, No. 4, 1916, p. 182 (off Gloucester Head).—Fowler, Copeia, No. 58, June 18, 1918, p. 63 (Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 281 (Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 210 (compiled); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 608 (Hong Kong), p. 642 (Padang).—Pillay, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, February 15, 1929, p. 366 (Travancore).—Tirant, Service Océanogr. Pêches Indo Chine, 6^{e} note, 1929, p. 168 (Phu-Yen).

Terapon theraps Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 24 (Iloilo).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (Bulan and Bacon).—Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, 1907, p. 243 (Zamboanga).

Therapon (*Datnia*) *theraps* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 113 (Singapore, Pinang, Sumatra, Java, Sumbawa, Celebes, Bouro, Philippines).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Indian Ocean); No. 5, 1874, p. 23 (China Sea); No. 7, 1879, p. 39 (China Sea).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (China Sea), p. 44 (Zanzibar).

Therapon obscurus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 135. Sea of the Indies.—Cantor, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1002 (Pinang).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 275 (copied).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (North Celebes).

Therapon squalidus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 136. Indian Ocean; Sea of the Indies.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 275 (copied).

Therapon transversus CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 137. Malabar.

Therapon cinereus VALENCIENNES, Hist. Nat. Poiss., vol. 3, 1829, p. 138. Sea of the Indies.—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 276 (India).—SCHMELTZ, Cat. Mus. Godeffroy, No. 3, 1866, p. 7 (Samoa); No. 4, 1869, p. 13 (Rockhampton).

Datnia virgata VALENCIENNES, Hist. Nat. Poiss., vol. 7, 1831, p. 480. Bengal Bay.

Therapon virgatus GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 276 (copied).

Therapon rubricatus RICHARDSON, Ann. Mag. Nat. Hist., vol. 9, 1842, p. 127. North west coast of Australia.

Perca argentea GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 277. India. (Name in text.)

Therapon nigripinnis MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 366. Rockingham Bay.

Depth 2⅔ to 3; head 2⅘ to 3⅖, width 1⅔ to 2. Snout 3 to 3⅓ in head; eye 3⅗ to 4⅗, little longer than snout in young to 1¼ to 1⅖ with age, greater than interorbital; maxillary reaches ⅕ to ½ in eye, expansion 1⅔ to 2¾ in eye, length 2⅔ to 3⅛ in head; bands of villiform teeth in jaws, outer row in each slightly enlarged, curved, conic; palate and tongue toothless; interorbital 3½ to 3⅞, slightly convex, striate; preorbital edge with small striae; preopercle edge with 35 denticles. Gill rakers 8+16, compressed, rather short or less than gill filaments.

Scales 45 to 52 in lateral line to caudal base and 4 or 5 more on latter; 9 or 10 scales above lateral line, 14 or 15 below, 12 to 15 predorsal, 5 or 6 rows on cheek. Suprascapula denticulate; scales with 11 or 12 basal radiating striae; apical denticles 15 to 19, small, with 3 or 4 transverse series of basal elements; circuli fine.

D. XI or XII, 9, I or 10, I, fourth spine 1⅗ to 2⅖ in head, fourth ray 2⅓ to 2⅖; A. III, 8 I, third spine 2⅛ to 2½, first ray 1⅞ to 2; caudal 1⅛ to 1⅕, emarginate; least depth of caudal peduncle 2 to 3; pectoral 1⅖ to 1½; ventral 1⅓ to 1⅖.

Back pale brown, below whitish, overshot with silvery white Diffuse horizontal band along base of spinous dorsal, another from side of occiput to middle of soft dorsal, third axial from snout tip through eye to caudal peduncle above and fourth from pectoral axil indistinctly till above vent. Iris pale brown. Fins light brown generally. Spinous dorsal with large black apical blotch. Small black spot at apex of soft dorsal, and second dark horizontal body band continues out over middle of soft dorsal horizontally. Upper caudal lobe tipped black, two dusky bars across lobe; lower caudal lobe with 2 dusky bars across. Anal with dark blotch medially.

Red Sea, Zanzibar, Seychelles, India, Andamans, Malacca, Singapore, Pinang, East Indies, Philippines, Cochin China, North Australia, Queensland, Micronesia. Similar to *Terapon jarbua* except the dark horizontal bands not bending downward and arranged a little differently. The two species are well contrasted as seen in Day's figures.

22613. Busin Harbor, Burias Island. April 22, 1908. Length 52 mm.
22525. Dagupan, Luzon. March 19, 1908. Length 69 mm.
19131. Dasol Bay. May 8, 1909. Length 192 mm.
7413. Port Uson, Busuanga Island. December 17, 1908. Length 184 mm.
11833, 20228. Sandakan market, Borneo. March 2, 1908. Length 94 to 100 mm.
Five examples. Sandakan Bay, Borneo. March 2, 1908. Length 84 to 104 mm.
32744 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 168 mm.
44571 U.S.N.M. Indian Ocean. Dr. W. L. Abbott. Length 51 to 63 mm. 3 examples.
47597 U.S.N.M. Red Sea. Glen Island, New York Museum. Length 172 to 208 mm. 2 examples.
47993 U.S.N.M. Cochin China. Lyons Museum. Length 58 mm.
57920 U.S.N.M. Zamboanga. Dr. E. A. Mearns. Length 18 mm.
72667 U.S.N.M. Java. Bryant and Palmer. Length 36 mm.
72668 U.S.N.M. Java. Bryant and Palmer. Length 135 to 153 mm. 2 examples.
27613 A.N.S.P. Padang, Sumatra. A. C. Harrison and H. L. Hiller. Length 150 mm. Two examples. When fresh in arrack silvery, upper parts pale brown, lower whitish. Nape deep brown and longitudinal band till behind middle of soft dorsal joined to an indistinct dark band extending along base of fin. Deep brown band from eye along side of body and upper part of caudal peduncle out over caudal to its edge. Pale band from lower side of head through pectoral and over lower side of caudal peduncle to its edge. Fins with more or less whitish and marginal portions of spinous ones with blackish blotch in front. Soft dorsal with several dusky blotches. Caudal lobes with blackish brown blotches or cross bands, that of upper terminal. Anal with dusky blotch. Pectoral slightly dusky. Ventral whitish. Peritoneum dusky gray.

Subgenus MESOPRISTES Bleeker

Lower opercular spine small, reaches little beyond opercular lobe. Suprascapula exposed, not hidden by scales. Coloration largely uniform.

TERAPON HILLI Castelnau

Therapon hilli CASTELNAU, Proc. Linn. Soc. New South Wales, vol. 2, 1877, p. 226. Taroom on the upper Dawson River.

Therapon hillii OGILBY and MCCULLOCH, Mem. Queensland Mus., vol. 5, 1916, p. 121, pl. 13, fig. 2, text fig. 1 (Zamia Creek, Gyranda and Norman River).

Depth 2⅓ to 2⅘; head 3$\frac{1}{10}$ to 3⅖. Snout 3$\frac{1}{10}$ to 3⅖ in head; eye 4⅓ to 5¼, 1⅛ to 1¾ in snout; maxillary reaches opposite hind nostril or front eye edge, expansion 2¼ in eye, length 3¼ to 4½ in head; each jaw with row of cardiform, somewhat flattened and partly depressed teeth, followed by broad band of villiform teeth; vomer with single median tooth or smooth; interorbital 3 to 3½ in head, flat or slightly convex; preopercle evenly denticulate behind, teeth slightly enlarged on rounded angle. Gill rakers ?, rather long and slender.

Scales 63 to 71 along above lateral line, 59 to 67 along below lateral line; 11 to 13 scales above lateral line, 19 to 21 below, 14 to 17 predorsal forward to occiput, 6 rows on cheek to preopercle ridge.

D. XIII, 11 or 12, sixth spine 1¾ to 1$\frac{9}{10}$ in head, first ray 2 to 2⅛; A. III, 9 or 10, second spine 1¾ to 2⅛; caudal 1 to 1⅛, emarginate behind; least depth of caudal peduncle 2¼ to 2½; pectoral 1⅓ to 1½; ventral 1⅕ to 1¼.

Olive or grayish green on back and sides, becoming lighter below. Irregular blackish spots or blotches may be present on body, not bilaterally symmetrical. Membranes of all fins except pectorals uniformly dusky. Length 272 mm. (Ogilby and McCulloch.)

TERAPON PARVICEPS Macleay

Therapon parviceps Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1884, p. 201. Upper Burdekin River, Queensland.—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 124, pl. 11, fig. 3 (types).

Depth 2⅘ to 2$\frac{9}{10}$; head 3 to 3⅗. Snout 3 to 3⅖ in head; eye 3⅔ to 5, 1 to 1½ in snout; maxillary reaches below hind nostril or to front eye edge, length 5 in head; band of minute teeth in each jaw, outer series largest, partly cardiform, also outer surfaces of teeth flattened, partly depressible; interorbital 2$\frac{9}{10}$ to 3⅕, little convex, smooth; preopercle edge evenly denticulate, denticles somewhat enlarged on rounded angle.

Scales 51 along above lateral line to caudal base and 49 to 56 along below lateral line; 9 scales above lateral line, 16 below, 5 or 6 rows on cheek to preopercle ridge.

D. XIII, 10 or 11, fourth spine 1¾ in head, first ray 1¾; A. III, 9, third spine 2⅕, second ray 1⅔; least depth of caudal peduncle 2⅛; pectoral 1⅖; ventral 1⅕; caudal 3⅓ in combined head and body to caudal base, deeply emarginate.

Brownish gray on back, becomes silvery on sides. Base of each scale of upper part of body with small dark spot. Silver band from upper lip to lower orbital edge. Fin membranes more or less dusky, soft dorsal, anal and caudal with lighter edges. Length 207 mm. (Ogilby and McCulloch).

TERAPON KNERI Bleeker

Therapon kneri Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 115 (on Kner).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 211 (type of *Therapon maculatus;* Fiji, Suva).

Therapon argenteus (not Cuvier) Kner, Sitz. Ber. Akad. Wiss. Wien, vol. 58, 1868, p. 299, pl. 1, fig. 1. Kandavu, Fiji.

Therapon maculatus Kendall and Goldsborough, Mem. Mus. Comp. Zoöl., vol. 26, 1911, p. 288, pl. 4, fig. 2. Suva, Fiji.

Mesopristes plumbeus (part) Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1918, p. 36.

Depth $2\frac{3}{5}$ to $2\frac{1}{2}$; head $2\frac{3}{5}$ to $2\frac{3}{4}$, width $2\frac{1}{8}$ to $2\frac{1}{5}$. Snout $2\frac{7}{8}$ to $3\frac{3}{5}$ in head; eye 3 to $3\frac{1}{5}$, $1\frac{1}{5}$ in snout or greater than snout in young, greater than interorbital at all ages; maxillary reaches opposite hind nostril, expansion 3 to $3\frac{1}{4}$ in eye, length $3\frac{1}{4}$ to $3\frac{1}{3}$ in head; teeth in villiform bands in jaws, with outer row uniformly enlarged; interorbital $4\frac{1}{8}$ to $4\frac{2}{3}$, nearly level; preopercle edge with rather large denticles. Gill rakers 9+17, lanceolate, equal gill filaments or $2\frac{1}{2}$ in eye.

Scales 48 or 49 in lateral line to caudal base and 5 more on latter; 11 scales above lateral line, 19 below, 15 predorsal to occiput, 7 rows on cheek to preopercle ridge. Suprascapula denticulated. Scales with 9 basal radiating striae; apical denticles 25, slender, rather long, with 6 transverse series of basal elements; circuli very fine.

D. XIII, 10, i, fourth spine $1\frac{2}{5}$ to $1\frac{4}{5}$ in head, fourth ray $1\frac{4}{5}$; A. III, 9, i, second spine $1\frac{3}{5}$ to $1\frac{4}{5}$, second ray $1\frac{3}{5}$ to $1\frac{2}{3}$; caudal $1\frac{1}{8}$ to $1\frac{1}{5}$, emarginate; least depth of caudal peduncle $2\frac{1}{2}$ to $2\frac{2}{3}$; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$; ventral $1\frac{1}{4}$.

Brown, little paler and with whitish tint below. Body with inconspicuous though slightly darker ill defined spots about size of pupil over all of trunk and tail. Iris whitish. Spinous dorsal, ventrals and front of anal blackish, fins otherwise all dull brown.

Polynesia. A very inconspicuous though well marked small species, readily known by its spotted coloration.

66062 U.S.N.M. Suva, Fiji. *Albatross* Collection. Length 59 to 88 mm. 4 examples. Paratypes of *Therapon maculatus.*

TERAPON MICRACANTHUS (Bleeker)

Datnia micracanthus Bleeker, Act. Soc. Sci. Ind. Néerland. (Celebes), vol. 8, 1860, p. 56. Lagusi, Celebes.

Therapon (*Datnia*) *micracanthus* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 117 (Celebes); vol. 8, 1876–1877, pl. (62)340, fig. 1.

Therapon micracanthus Weber, Zool. Ergebn. Reise Nederland. Ost. Ind., vol. 3, 1894, p. 408 (Amparang River south of Balanguipa, Minralang River, at Tempe and Tjenrana River at Pampanua, Celebes).

Therapon trimaculatus Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1884, p. 259. Fresh water, Goldie River, British New Guinea.—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 120, pl. 13, fig. 1 (types).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 212 (compiled).

Therapon habbemai Weber, Notes Leyden Mus., vol. 34, pt. 4, 1910, p. 234. Lorentz River; Nova Guinea, vol. 9, pt. 4, 1913, p. 583, figs. 33–34 (Alkmaar, Lorentz River, Bivak Island).—Regan, Trans. Zool. Soc. London, vol. 20, pt. 6, 1914, p. 276 (Mimika River, New Guinea).

Depth $2\frac{1}{10}$ to $2\frac{1}{2}$; head $2\frac{7}{8}$ to $2\frac{9}{10}$. Snout $2\frac{4}{5}$ to $3\frac{7}{10}$ in head; eye $3\frac{1}{10}$ to $4\frac{3}{5}$, 1 to $1\frac{1}{4}$ in snout; maxillary reaches opposite hind nostril or front eye edge, expansion $2\frac{1}{8}$ in eye, length $3\frac{1}{8}$ in head; band of teeth in each jaw, with outer ones largest, cylindrical, fixed; interorbital width slightly less than snout, but little elevated; preopercle edge denticulate. Lower gill rakers 12, short, thick.

Scales 47 to 54 along above lateral line to caudal base, 46 to 50 along below lateral line; 8 scales above lateral line, 17 below, 16 ? predorsal to occiput, 6 or 7 rows on cheek to preopercle ridge.

D. XIII, 11 to 13, fifth spine 2 in head, third ray 1⅞; A. III, 10 or 11, second spine 2⅞, third ray 1⅞; caudal 1⅓, hind edge slightly concave; least depth of caudal peduncle 2⅓; pectoral 1⅓; ventral 1⅓.

Eight rather broad dark bands on side of body, above lateral line follow curve of back and more or less confluent posteriorly, those below horizontal. Median band ends in dark mark on caudal base, above and below 2 dark rounded spots. Another spot on upper edge of caudal peduncle. Sometimes outer portions of dorsal and anal light colored, also spinous dorsal and anal with darker markings. Light curved band at pectoral base. Opercular membrane blackish posteriorly. Length 200 mm. (Ogilby and McCulloch.)

East Indies.

TERAPON BIDYANA (Mitchell)

Acerina (Cernua) bidyana MITCHELL, Three Exp. Interior Eastern Australia, vol. 1, 1838, p. 95, pl. 8. Lat. 29° 9′ S., river between Gwydi River and McIntyre River, New South Wales.

Therapon bidyana McCULLOCH, Rec. Australian Mus., vol. 9, 1913, p. 359 (New South Wales); Proc. Linn. Soc. New South Wales, vol. 40, 1915, p. 262, pl. 36, fig. 1 (Murrumbidgee River).—OGILBY and McCULLOCH, Mem. Queensland Mus., vol. 5, 1916, p. 112 (Australia).

Datnia elliptica RICHARDSON, Ichth. Voy. Erebus and Terror, 1844–48, p. 118, pl. 52, figs. 4–8. Rivers in Western Australia.

Therapon ellipticus GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 276 (type; Naomi River, Australia).—KLUNZINGER, Arch. Naturg., vol. 38, pt. 1, 1872, p. 21 (Murray River).—CASTELNAU, Proc. Zool. Acclimat. Soc. Victoria, vol. 2, 1873, p. 127 (Western Australia).—KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 350 (Murray River, Port Philip, Hobson's Bay.)—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 363 (rivers of Western Australia).—MEYER, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Laguna de Bay, Luzon).—ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 472 (Laguna de Bay).—WAITE, Rec. Australian Mus., vol. 3, 1900, p. 210 (Kimberley, West Australia).—STEAD, Fishes of Australia, 1907, p. 122, pl. 4 (New South Wales, Victoria, Queensland, South Australia, West Australia).

Terapon ellipticus WAITE, Mem. New South Wales Natural. Club, No. 2, 1904, p. 33.—STEAD, Edible Fish. New South Wales, 1908, p. 73, pl. 42.

Therapon niger CASTELNAU, Proc. Zool. Acclimat. Soc. Victoria, vol. 1, 1872, p. 38. Murray River; vol. 2, 1873, p. 38 (Murray River); Rec. London Internat. Exhib., 1873, p. 9 (Victoria).—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 365 (Murray basin); vol. 9, 1884, p. 12 (note).

Therapon richardsonii CASTELNAU, Rec. London Internat. Exhib., 1873, pt. 7, No. 5, p. 9. Victoria, Australia.—MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 364 (Murray basin).—LUCAS, Proc. Roy. Soc. Victoria, ser. 2, vol. 2, 1890, p. 19 (Murray River).—KENT, Great Barrier Reef, 1893, pp. 282, 369 (Queensland).

Therapon richardsoni Ramsay, Proc. Linn. Soc. New South Wales, vol. 6, 1882, p. 832 (Macquarie River).

Therapon macleayana Ramsay, Proc Linn. Soc. New South Wales, vol. 6, 1882, p. 831. Macquarie River.

Therapon macleayanus Lucas, Proc. Linn. Soc. New South Wales, vol. 9, 1884, p. 12 (Macquarie River).

Depth 2¾ to 3⅕; head 3⅖ to 3¾, width 1⅘ to 1⅞. Snout 3⅕ to 3⅓ in head; eye 4⅖ to 4¾, 1⅓ in snout, 1⅖ to 1⅔ in interorbital; maxillary reaches opposite hind nostril, expansion 2⅓ to 2⅖ in eye, length 3⅞ to 4½ in head; teeth villiform, in rather narrow bands in jaws, outer row uniformly and slightly enlarged; interorbital 2$\frac{9}{10}$ to 3⅛, broadly convex; preopercle edge strongly denticulate. Gill rakers 11+16, slender, lanceolate, 1¼ in gill filaments, which 1½ in eye.

Scales 77 in lateral line to caudal base and 7 more on latter; tubular scales 51 in lateral line to caudal base and 5 more on latter; 15 scales above lateral line, 23 below, 32 predorsal to occiput, 7 rows on cheek to preopercle ridge. Suprascapula denticulate. Scales with 11 basal radiating striae; apical denticles 29, small, with 4 transverse series of basal elements; circuli fine.

D. XII, 12, fourth spine 1⅞ to 2 in head, second ray 1⅞ to 2⅒; A. III, 8, second spine 1⅔, first ray 1¾ to 1⅘; caudal 1⅕, emarginate, very slightly so as expanded; least depth of caudal peduncle 2⅓; pectoral 1⅖ to 1½; ventral 1⅓.

Brown, paler to whitish below. Fins all uniformly brown, lower ones paler.

Rivers of Australia.

42016 U.S.N.M. Bourke, New South Wales. Australian Museum. Length 241 mm.

42017 U.S.N.M. Bourke. Australian Museum. Length 248 mm.

47795 U.S.N.M. Bourke. Australian Museum. Length 203 mm.

TERAPON HUMERALIS Ogilby

Therapon humeralis Ogilby, Proc. Linn. Soc. New South Wales, vol. 24, 1899 (1900), p. 177. Pelsart Island, Houtman's Abrolhos, Western Australia.—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 114 (Houtman's Abrolhos).

Terapon humeralis Waite, Rec. Australian Mus., vol. 6, 1905, p. 62, pl. 9 (Houtman's Abrolhos).

Depth 2⅘ to 2$\frac{9}{10}$; head 3⅓. Snout 3⅖ in head; eye 3⅗ to 3⅘, equals snout or little shorter; maxillary reaches eye, length 3⅗ in head; teeth in band in each jaw, outer row enlarged, conic, not cardiform; interorbital but little elevated; preopercle with strong spines, little enlarged around angle. Gill rakers moderately long and numerous.

Scales 80 to 90 in lateral line to caudal base; 13 scales above lateral line, 25 below, 8 or 9 rows on cheek.

D. XII or XIII, 11, fifth spine 1⅔ in head, second ray 1⅗; A. III, 10, second spine 2, first ray 1⅗; caudal 1⅛, truncate; least depth of caudal peduncle 2½; pectoral 1⅓; ventral 1¼.

Broad dark shoulder spot. Body with 4 dark cross bars, first incomplete below anterior dorsal spines and last on caudal peduncle. Dark bars and spots below and behind eye. Soft dorsal, anal and caudal with dark spots. Length 210 mm. (Waite, Ogilby, McCulloch.)

Western Australia.

TERAPON CANCELLATUS (Cuvier)

Datnia cancellata Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 144. No locality (collection Kuhl and Van Hasslet, likely from Java).

Therapon cancellatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 276 (copied).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (32) 310, fig. 4.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Manado, Celebes).—Weber, Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 262 (Ambon).—Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 258 (Mindoro).

Therapon (Datnia) cancellatus Peters, Monatsb. Akad. Wiss. Berlin, 1868, p. 256 (Loquilocum, Sancar; Bureauen River, Leyte).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 116 (Java, Celebes, Amboina).

Therapon interruptus Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 258. Fresh water of Normanby Island, New Guinea.—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 211 (compiled).

Therapon (Datnia) interruptus Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 114, pl. 10, fig. 2 (types).

Depth 2⅔ to 2⅘; head 2⅘ to 3, width $1\frac{2}{10}$ to 2⅕. Snout 2⅗ to 3 in head; eye 3 to 4⅗, 1⅛ to 1⅘ in snout, $1\frac{1}{10}$ to 1⅛ in interorbital, greater than interorbital in young; maxillary reaches eye in young, reaches 1¼ in eye with age, expansion 1¾ to 2⅓ in eye, length 2⅔ to 3⅕ in head; lips rather broad and fleshy; teeth in jaws small, simple, conic, in 5 irregular rows with outermost slightly enlarged, none on palate or tongue; interorbital 3⅗ to 4⅕, broadly convex; preopercle edge with 21 small denticles; suborbital with several short, weak denticles above maxillary expansion. Gill rakers 10+18, lanceolate, short, 1½ in gill filaments, which 1½ in eye.

Scales 53 to 58 in lateral line to caudal base and 10 more on latter; tubular scales 50 to 53 in lateral line to caudal base and 5 or 6 more on latter; 11 or 12 scales above lateral line, 20 or 21 below, 14 to 16 predorsal forward to occiput, 8 or 9 rows on cheek. Suprascapula finely denticulate. Scales with 8 or 9 basal radiating striae; apical denticles 44 to 75, slender, small, with 6 to 13 transverse basal elements; circuli very fine.

D. XII, 10, I, fifth spine 1¾ to 2 in head, first ray 1½ to 1⅘; A. III, 8, I or 9, I, second spine 1⅔ to 2, first ray 1¼ to 1⅗; caudal 1 to 1⅕, deeply emarginate; least depth of caudal peduncle 2½ to 3; pectoral 1¼ to 1⅗; ventral $1\frac{1}{10}$ to 1⅖.

Back dull drab brown, fading paler on sides and under surfaces whitish, everywhere with bright silvery white reflections. Back with 7 broad, deep brown transverse bands, little wider than interspaces and on sides not extending below axial line. On body a dark medial longitudinal or axial band, not wider than pupil, also 2 more similar horizontal bands below and all more or less broken as variable spots. Fins pale brownish, apex of soft dorsal, front of anal and most of caudal rather darker than body color. Rounded dusky brown blotch less than eye at caudal base medially. Iris pale brownish.

East Indies, Philippines, Melanesia. A very well marked species with large mouth and protruding, pointed, fleshy snout. Fins all well angulated, more apparent as retracted. The ventrals do not show a large, dark blotch antero medially, as shown in Bleeker's figure.

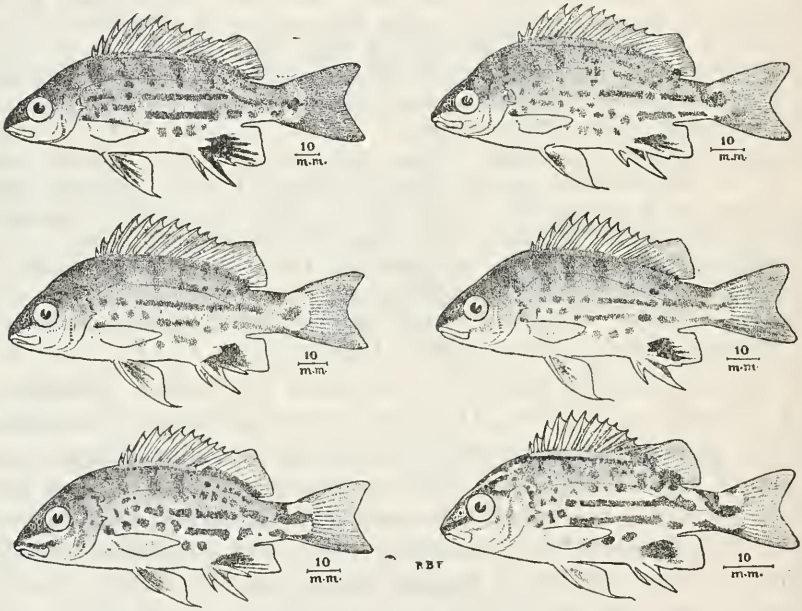
10 m.m.
10 m.m.
10 m.m.
10 m.m.
10 m.m.
10 m.m.
RBF

FIGURE 27.—TERAPON CANCELLATUS (CUVIER). VARIATION OF COLOR MARKINGS

22651. Basud River, Luzon. January 15, 1909. Length 110 mm.
8043. Dumaca River. February 25, 1909. Length 252 mm.
13959. Isabela River, Basilan Island. September 11, 1909. Length 198 mm.
9568. Mahinog River, Camiguin Island. August 3, 1909. Length 117 mm.
5896, 5897. Malaga River, Hinunangan Bay, Leyte. September 30, 1909. Length 106 to 125 mm.
19652. Malaga River. July 30, 1909. Length 94 mm.
6347, 11936, 11937, 11966, 21792. Nonucan River, Camp Overton, Mindanao. August 6, 1909. Length 142 to 200 mm.
20352. Port Matalvi. November 27, 1908. Length 116 mm.

11430, 11433. Pucot River, Manila Bay. January 29, 1909. Length 131 to 150 mm.
19836, 19837 [1746]. San Roque, Leyte. July 29, 1909. Length 76 to 87 mm.
5864 to 5866. Small stream, San Roque, Leyte. July 29, 1909. Length 78 to 84 mm.
9247. Varadero Bay, Luzon. July 23, 1908. Length 243 mm.
7640 to 17642, 17229. Yaua River, Legaspi, Luzon. June 7, 1909. Length 115 to 198 mm. 11 examples.
13922. Amboina stream, Amboina, Dutch East Indies. December 7, 1909. Length 155 mm.
A1284, A1285, A1286, A1287, 9739, 9740, 9741, 13494. Uki, Boero Island. December 9, 1909. Length 148 to 257 mm.
7215. Limbe Strait, Celebes. November 9, 1909. Length 238 mm.

TERAPON ROSENBERGH (Bleeker)

Datnia rosenbergii Bleeker, Nat. Tijds. Nederland. Indië, vol. 22, 1860, p. 237. Ruwata River, southern Ceram.
Therapon (*Datnia*) *rosenbergii* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 116 (Ceram).
Therapon rosenbergii Bleeker, Atlas Ichth. Ind. Néerland., vol. 7 1873–1876, pl. (26) 304, fig. 1.—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, No. 9, p. 118 (River at Batu Merah, Ambon; river at Batjan).

Depth 3; head 3⅛. Snout 3⅒ in head; eye 4, 1⅓ in snout; maxillary reaches ⅕ in eye, expansion 1⅘, length 3 in head; jaw teeth in several series, outer row little larger; interorbital little elevated; preopercle edge strongly denticulated.

Scales 50 in lateral line to caudal base (figure shows about 67 pores to caudal base and 2 more on latter); 12 scales above lateral line, 15 below, 4 rows on cheek. Suprascapula denticulate.

D. XII, 11, fifth spine 1¾ in head, first ray 1½; A. III, 9, second spine 1⅞, second ray 1¼; caudal 1⅕, little emarginate behind; least depth of caudal peduncle 2⅔; pectoral 1⅓; ventral 1⅛.

Above bluish green, below silvery. Iris yellow. Median lateral obscure brown band, also 2 below parallel, incomplete. About 4 pale diffuse deep gray vertical bands. Fins yellowish, dorsal and anal rays violaceous basally. Length 153 mm. (Bleeker.)

East Indies.

TERAPON ARGENTEUS (Cuvier)

Datnia argentea Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 139, pl. 54. Java.—Day, Fishes of India, pt. 1, 1875, p. 71, pl. 18, fig. 7.
Therapon argenteus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 283 (Amboina, India, Cape Seas).—Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Manila).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 8, 1876–1877, pl. (48) 326, fig. 1.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Laguna de Bay, Luzon).—Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Pasacao).—Day, Fauna Brit. India, Fishes, vol. 1, 1889, p. 507.—Weber, Zool. Ergebn. Reise Nederland. Ost

Ind., vol. 3, 1894, p. 407 (Amparang River, Celebes); Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 262 (Ambon).—Elera, Cat. Fauna Filip., vol. 1, 1895, p. 473 (Luzon, Camarines Sur, Pasacao, Manila, Laguna de Bay).—Beaufort, Bijd. Dierk., Amsterdam, pt. 19, 1913, p. 118 (Kairatu, West Ceram).—Weber, Nova Guinea, vol. 9, pt. 4, 1913, p. 582 (Sermowai River).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 212 (compiled).

Therapon (*Datnia*) *argenteus* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 114 (Java, Sumatra, Amboina); vol. 8, 1876–1877, pl. (61) 339, fig. 4.—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 115 (Port Moresby, Papua; Normanby Island in fresh water; Santo and Eromanga, New Hebrides; Queensland).

Mesopristes macracanthus Bleeker, Nat. Geneesk. Arch. Nederland. Indië (Typogr. Batavia), vol. 2, 1845, p. 523. Batavia, Java.

Datnia cancellatoides Bleeker, Nat. Tijds. Nederland. Indië, vol. 4, 1853, p. 247. Priaman, Sumatra, in sea; Amboina, in rivers.

Datnia obtusirostris Guichenot, Mém. Soc. Sci. Nat. Cherbourg, vol. 12, 1866, p. 132. Madagascar.

Therapon obtusirostris Sauvage, Hist. Nat. Madagascar, Poiss., 1891, p. 155, pl. 28, fig. 5 (Madagascar).

Therapon nasutus Macleay, Proc. Linn. Soc. New South Wales, vol. 7, 1882, p. 258. Fresh water, Normanby Island.

Therapon chalybeus Macleay, Proc. Linn. Soc. New South Wales, vol. 8, 1884, p. 259. Fresh water, Normanby Island.

Therapon acutirostris De Vis, Proc. Linn. Soc. New South Wales, vol. 9, 1884, p. 398. Queensland.

Depth 2½ to 2⅔; head 2⅘ to 3⅛, width 1⅞ to 2⅛. Snout 2 to 2½ in head; eye 3⅖ to 4⅛, 1⅓ to 1⅔ in snout, greater than interorbital in young to equal with age; maxillary reaches eye in young, falls little short with age, expansion 2 to 2⅓ in eye, length 3 to 3⅛ in head; lips narrow, somewhat fleshy; teeth fine, in rather narrow bands in jaws, of 5 irregular series and slightly enlarged outer series; interorbital 3⅗ to 4½ in head, scarcely elevated, nearly level; preopercle edge with 18 to 20 denticles. Gill rakers 10+17, lanceolate, slightly less than gill filaments or 2⅖ in eye.

Scales 56 to 58 in lateral line to caudal base and 10 to 12 more on latter; 11 to 12 scales above lateral line, 18 to 21 below, 13 to 16 predorsal, 5 rows on cheek. Suprascapula denticulate. Scales with 11 basal radiating striae; apical denticles 39 to 68, slender, with 6 to 9 transverse series of basal elements; circuli fine.

D. XII, 10, I, fourth spine 1⅗ to 1¾ in head, second ray 1⅔ to 1⅞; A. III, 8, I, second spine 1⅖ to 1⅘, second ray 1⅗ to 1⅔; caudal 1⅕ to 1¼, slightly emarginate, nearly truncate as expanded; least depth of caudal peduncle 2⅗ to 2¾; pectoral 1⅓ to 1⅖; ventral 1⅕ to 1⅓.

Back brown, little paler on sides and whitish on under surface. Body with bright silvery reflections, spines burnished with silvery white. Margin of gill opening narrowly dusky brown. Iris brownish yellow. Spinous dorsal with deep brown shading on membranes. Soft dorsal and caudal brown like back. Anal with membranes of spinous fin and median part of soft fin dusky, fin with pale border all around. Pectoral pale. Ventral pale, with large anterior dark brown area.

India, East Indies, Philippines, Queensland. The young differ from the adults in the dark brown longitudinal or horizontal bands, becoming obscure with age. They are well shown in Bleeker's figure. Variation is noticed as sometimes the second dark band on the back may be broken or irregular.

Bleeker gives the dimensions as 275 mm. and his figure is without the median dark areas on the ventrals and anal. Day does not give the origin of his figure. He says "I never obtained it in India, saw it in a local collection there, or observed any figure of it amongst drawings of Indian fishes, but as it is found in the Malay Archipelago, stray ones may very possibly be occasionally captured on the coast of India."

22650. Basud River, Luzon. January 15, 1909. Length 90 mm.
20089. Iwahig River and tributaries, Puerta Princesa, Palawan. April 4, 1909. Length 89 mm.
19875. Maagnas, Lagonoy Gulf, Luzon. June 17, 1909. Length 96 mm.
5893, 5894. Malaga River. July 30, 1909. Length 97 to 110 mm.
11938, 21793. Nonucan River, Camp Overton, Mindanao. August 6, 1909. Length 83 to 203 mm. 3 examples, of which one taken from stomach of large eel.
11432 [1092]. Pucot River, Manila Bay, Luzon. January 29, 1909. Length 97 mm.
5860 to 5863. Small stream, San Roque, Leyte. Length 78 to 87 mm. [1745.]
12307. Stream at Maagnas, Lagonoy Gulf, Luzon. June 22, 1909. Length 129 mm.
8042. Tumindao Reef, Sulu Group. February 26, 1908. Length 248 mm.
9245 and 9246. Varadero Bay, Luzon. July 23, 1908. Length 233 to 267 mm.
17227. Yaua River, Legaspi, Luzon. June 7, 1909. Length 81 to 179 mm. 19 examples.
9742, 13495. Uki, river at village, Boero Island, Dutch East Indies. December 9, 1909. Length 155 to 158 mm.
A1288. Uki River. December 9, 1909. Length 193 to 197 mm. 2 examples.

The following examples are all dull, though with rather obscure dark longitudinal bands:

11695. Capunuypugan Point, Generale Island, off east Mindanao. May 10, 1908. Length 123 mm.
5331, 5333, 5334, 5336, 6349, 6350, 11962, 11963, 11964, 21791. Nonucan River, Camp Overton, Mindanao. August 6, 1909. Length 112 to 161 mm.
11431 [1091]. Pucot River, Manila Bay, Luzon. January 29, 1909. Length 165 mm.
7262, 7264, 7265, 11571, 11572, 12302 to 12306. Stream at Maagnas, Lagonoy Gulf, Luzon. June 17, 1909. Length 118 to 160 mm.
17228. Yaua River, Legaspi, Luzon. June 7, 1909. Length 165 mm.

TERAPON LAMBERTONI Fowler

Therapon lambertoni FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1923, p. 40. Tananarive, Madagascar.

Depth 2⅗; head 3, width 2. Snout 3 in head; eye 3, equals snout, greater than interorbital; maxillary reaches eye, length 3⅖ in head; teeth in rather wide bands in jaws, outer series enlarged and curved, especially medianly; interorbital 3⅗, very slightly convex; preopercle edge behind strongly dentate. Gill rakers 8+17, lanceolate, ⅞ of gill filaments, which ½ of eye.

Scales 65 along above lateral line to caudal base; 50 tubular scales in lateral line to caudal base and 5 more on latter; 12 scales above lateral line, 24 below, 14 predorsal forward to occiput, 5 rows on cheek to preopercle ridge. Scales with 12 to 14 basal radiating striae; apical denticles 35 to 38, with 5 to 7 transverse series of basal elements; circuli moderate.

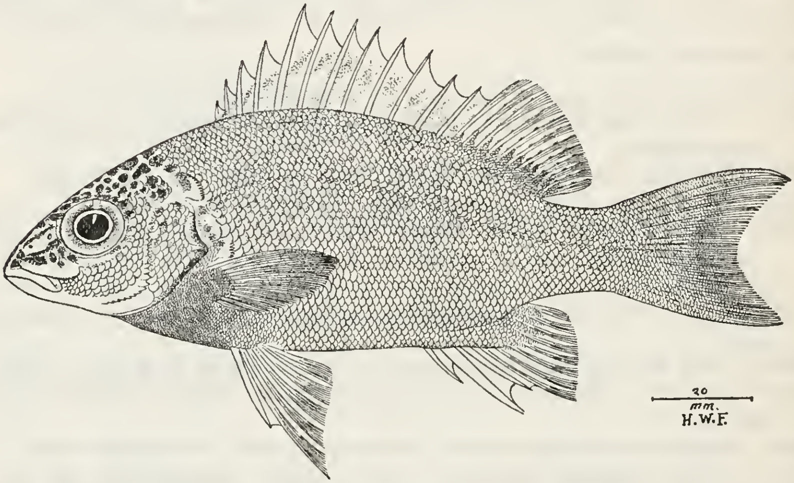

FIGURE 28.—TERAPON LAMBERTONI FOWLER. TYPE.

D. XII, 10 i, fifth spine 1⅔ in head, second ray 1⅘; A. III, 8, i, second spine 1¾, second ray 1⅔; caudal 1⅛, well forked lower lobe slightly longer; least depth of caudal peduncle 2⅓; pectoral 1⅗; ventral 1⅓.

Nearly olive lake on back and upper surfaces, which also tinged with dark gray, as if very indistinctly or finely mottled with darker. Lower sides and under surfaces whitish. Head above obscurely spotted with dusky brown, also median dusky brown streak, one above each eye and over nostrils, and one from front eye edge below each nostril to snout tip. Iris dull brownish. Lips pale. Fins all more or less, at least basally, with tints like on back. Dorsal spines basally burnished with silvery white. Outer portions of dorsals and caudal with obscure dusky tints. Lower fins with nearly amber yellow tinge.

Only known from the type.

No. 51096 A.N.S.P. Tananarive, Madagascar. M. C. Lamberton. Length 158 mm.

TERAPON ALLIGATORIS Rendahl

Terapon alligatoris RENDAHL, Nyt Mag. Naturw. Kristiania, vol. 60, 1922, p. 185. South Alligator and McKinley Rivers, Northwest Australia.

Depth $2\frac{3}{5}$ to $2\frac{9}{10}$; head $2\frac{3}{5}$ to $2\frac{4}{5}$. Snout $2\frac{7}{10}$ to $2\frac{9}{10}$ in head, sharply pointed; eye $3\frac{1}{2}$ to $4\frac{1}{5}$, $1\frac{1}{5}$ to $1\frac{3}{5}$ in snout; upper jaw longer than lower; interorbital 5 to $5\frac{3}{10}$ in head; hind edge and angle of preopercle serrated, lower edge entire; opercle with 2 spines, lower not produced beyond opercular lobe. Gill rakers 9+17, longest $\frac{1}{3}$ of eye.

Scales 53 along above lateral line to caudal base, 46 along below lateral line to caudal base; 7 scales above lateral line to middle of spinous dorsal base, scales on cheek in 7 rows. Suprascapula and coracoid bones denticulate.

D. XII, 12 or 13, fifth spine 2 to $2\frac{1}{10}$ in head, longest ray $2\frac{1}{5}$ to $2\frac{3}{5}$; A. III, 8, second spine $1\frac{9}{10}$ to $2\frac{1}{10}$; dorsal and anal spines long and strong.

Light brown, paler below. Back with slight purplish tinge. On hind border of soft dorsal and anal black basal blotch. Pectoral yellowish, other fins with dark membranes. Length 87 mm. (Rendahl.)

North West Australia.

TERAPON ELONGATUS (Guichenot)

Datnia elongata GUICHENOT, Mém. Soc. Sci. Nat. Cherbourg, vol. 12, 1866, p. 133. Madagascar.

Therapon elongatus SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 154, pl. 9, figs. 1–a (type).

Depth $2\frac{3}{5}$; head $2\frac{3}{4}$. Snout 3 in head; eye $3\frac{2}{5}$, $1\frac{1}{5}$ in snout, 1 in interorbital; maxillary reaches $\frac{3}{4}$ in snout, length $3\frac{1}{3}$ in head; upper teeth slightly larger than lower; interorbital but slightly elevated; preopercle denticulate, denticles as 3 or 4 strong spines around angle.

Scales 65 in lateral line; 10 scales above lateral line, 20 below.

D. XII, 10, fourth spine $1\frac{9}{10}$ in head, first ray $2\frac{1}{3}$; A. III, 8, second spine $1\frac{4}{5}$, second ray $1\frac{3}{4}$; caudal $1\frac{2}{5}$, truncate; least depth of caudal peduncle $3\frac{1}{5}$; pectoral $1\frac{4}{5}$; ventral $1\frac{4}{5}$.

Silvery, deeper colored on back. Each side of body with 3 broad brownish or blackish longitudinal bands composed of approximating dots, one on snout before eye and another on opercle. Dorsal and anal spines silvery, membranes of soft fins with pectorals and caudal gray or yellowish. Border of spinous dorsal black. Length 67 mm. (Sauvage.)

Madagascar.

TERAPON CARBO Ogilby and McCulloch

Therapon carbo Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 116, pl. 12, fig. 1. Upper waters of the Gregory River, District of Carpenteria.—Kent, Great Barrier Reef, 1893, p. 369 (name only; Queensland).—Johnson and Bancroft, Proc. Roy. Soc. Queensland, vol. 33, No. 10, 1921, p. 177 (mortality in Thomson River, Cooper's Creek).

Depth $2\frac{1}{3}$ to $2\frac{2}{5}$; head $2\frac{4}{5}$ to 3, width $1\frac{2}{3}$. Snout 3 to $3\frac{1}{5}$ in head; eye 4, $1\frac{1}{5}$ to $1\frac{1}{3}$ in snout; maxillary reaches below hind nostril, length $3\frac{1}{2}$ in head; teeth in villiform band in each jaw, outer row enlarged and erect; interorbital slightly convex, width little less than snout; hind preopercle edge coarsely serrated. Gill rakers 5+11, $\frac{1}{3}$ of eye.

Scales 63 along lateral line above, 58 along lateral line below; tubes 56 in lateral line; 10 scales above lateral line, 23 below, 7 rows on cheek.

D. XII, 13 or 14, fifth or sixth spines $2\frac{1}{2}$ to $2\frac{2}{3}$ in head, fourth ray $2\frac{1}{10}$; A. III, 11 or 12, second spine $2\frac{2}{3}$ to $2\frac{3}{4}$, third ray $2\frac{1}{8}$; caudal $1\frac{1}{3}$, rounded; least depth of caudal peduncle $2\frac{2}{5}$; pectoral $1\frac{1}{2}$; ventral $1\frac{3}{5}$.

Uniform blackish. Length 182 mm. (Ogilby and McCulloch.)

TERAPON FULIGINOSUS Macleay

Therapon fuliginosus Macleay, Proc. Linn. Soc. New South Wales, vol. 8, pt. 2, 1884, p. 201. Upper Burdekin, Queensland.—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 117, pl. 12, fig. 2 (types).—Fowler, Mem. Bishop Mus., vol. 10, 1929, p. 212 (compiled).

Hephaestus tulliensis De Vis, Proc. Linn. Soc. New South Wales, vol. 9, 1885, p. 399. Tully and Murray Rivers, Queensland.

Therapon romeri Weber, Notes Leyden Mus., vol. 32, pt. 4, 1910, p. 233. Lorentz River, New Guinea; Nova Guinea, vol. 9, pt. 4, 1913, p. 584, fig. 35 (Lorentz River at Van Weelskamp, Sebang and Regeninsel).

Depth $2\frac{3}{5}$; head $2\frac{9}{10}$ to $3\frac{1}{4}$. Snout $2\frac{7}{8}$ to $3\frac{1}{10}$ in head; eye 4 to $4\frac{1}{2}$, $1\frac{1}{3}$ to $1\frac{2}{5}$ in snout, greater than interorbital in young to less with age; maxillary nearly reaches eye or $\frac{1}{5}$ in eye, $3\frac{1}{4}$ in head; teeth in bands in jaws, outer row enlarged; interorbital little elevated, nearly flat, without bony ridges; preopercle evenly denticulate, denticles largest above rounded angle. Lower gill rakers 16, well developed, slender.

Scales 51 to 58 along above lateral line to caudal base, 46 to 50 along below lateral line to caudal base; 9 or 10 above lateral line, 14 below, 8 or 9 rows on cheek.

D. XII, 13, fifth spine 2½ in head, third ray 2⅕; A. III, 9 or 10, third spine 2½, third ray 1⅘; caudal 1⅛, slightly emarginate behind; least depth of caudal peduncle 2; pectoral 1⅖; ventral 1¼.

Uniform dark purplish brown, each scale with lighter edge. Soft dorsal and anal with wide gray border. Pectorals gray, with more or less distinct basal bar. Ventral tips translucent gray. Length 327 mm. (Ogilby and McCulloch.)

TERAPON BANCROFTI Ogilby and McCulloch

Therapon bancrofti Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 119, pl. 11, fig. 2. Eureka Creek, Stannary Hills, North Queensland.

Depth 2⅔ to 2⅘; head 2¾ to 3⅙, width 1⅗ to 1⅘. Snout 2½ to 2⅘ in head; eye 5½, 1⅘ to $1\frac{3}{10}$ in snout; maxillary not quite reaching eye, length $3\frac{1}{10}$; band of villiform teeth in each jaw, outer row strong, conic, ends slightly recurved; all tipped golden bronze; interorbital convex. Gill rakers 7 + 17, rather slender, 2¼ in eye.

Scales 57 to 61 along above lateral line, 51 to 55 along below lateral line; tubular scales 50 or 51 in lateral line; 11 scales above lateral line, 20 or 21 below, 8 rows on cheek.

D. XII, 12 or 13, fifth or sixth 2¾ to $3\frac{1}{10}$ in head, fourth ray 2⅕; A. III, 8 or 9, second spine 3 to 3⅕, third spine 2; caudal 1½, hind edge slightly emarginate; least depth of caudal peduncle 2⅖; pectoral 1½; ventral 1⅗.

Head, trunk and tail above dark purplish brown, lighter below. On sides of trunk central gray spot on each scale, becoming larger and deeper tinted below. Throat and abdomen pale brown, uniform or with large bluish white blotches irregular or variable. Side of head brown. Lips edged white, intermandibular white or light brown. Unpaired fins blackish, ends of hind dorsal and anal rays and outer half of caudal lavender. Pectorals and ventrals terminally, gray. Length 260 mm. (Ogilby and McCulloch.)

LEIOPOTHERAPON, new subgenus[30]

Type.—Datnia plumbea Kner.

Diagnosis.—Differs from the other subgenera in the genus in having the suprascapula not exposed, hidden by scales.

TERAPON PERCOIDES Günther

Therapon percoides Günther, Ann. Mag. Nat. Hist., ser. 3, vol. 14, November 1864, p. 374. Fitzroy River near Rockhampton; ser. 3, vol. 20, 1867, p. 58 (Fitzroy River, Nicol Bay).—Schmeltz, Cat. Mus. Godeffroy, No. 5, 1874, p. 23 (Bowen); No. 6, 1877, p. 12 (Burnett River, Gayndah); No. 7, 1879, p. 39 (Bowen).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 362 (north Queensland river); vol. 1882, p. 69 (Palmer River; rivers of Gulf of Carpenteria); vol. 8, 1883, p. 20 (Lillesmere Lagoon, Upper

---

[30] λεῖος smooth; ὦμος shoulder; *Therapon.*

Burdekin River).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Bowen).—Weber, Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 262 (Burnett River).—Lucas, Proc. Linn. Soc. New South Wales, ser. 2, vol. 9, 1895, p. 362 (near McDonnell Ranges).—Zietz, Narrat. Horn Exp. Central Australia, vol. 2, 1896, Zool., p. 177, pl. 16, fig. 1 (McDonnell Ranges).—Bancroft, Proc. Roy. Soc. Queensland, vol. 23, 1912, p. 255 (Burnett River).—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 105, pl. 10, fig. 1 (Fitzroy River, Burnett River, Eureka Creek, Barron River, Flinders River).

Therapon fasciatus Castelnau, Researches Fish. Australia, 1875, p. 11. West Australia; Proc. Linn. Soc. New South Wales, vol. 2, 1876, p. 228 (west coast of Australia).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 363 (Swan River; ? Norman River); vol. 7, 1882, p. 67 (Palmer River).—Waite, Proc. Linn. Soc. New South Wales, ser. 2, vol. 9, 1894, p. 362 (Central Australia near McDonnell Ranges; Hodgkinson River).

Datnia faciata Steindachner, Sitz. Ber. Akad. Wiss. Wien, vol. 56, pt. 1, 1867, p. 322. Port Jackson (error for Queensland).

Therapon terrae-reginae Castelnau, Proc. Linn. Soc. New South Wales, vol. 2, 1877, p. 227. North Queensland, probably the Fitzroy River; vol. 3, 1878, p. 46 (Norman River).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 363 (rivers of northern Queensland); vol. 7, 1882, p. 69 (said to=*T. percoides*).

Therapon spinosior De Vis, Proc. Linn. Soc. New South Wales, vol. 9, pt. 2, Aug. 19, 1884, p. 397. Queensland.

Depth 2⅖ to 2⅗; head 3⅛ to 3⅕, width 1¾ to 1⅞. Snout 3 in head; eye 3½ to 3⅗, 1½ in snout, 1⅒ to 1⅛ in interorbital; maxillary reaches hind nostril, expansion 2½ in eye, length 3¾ to 3⅘ in head; teeth fine, in rather broad bands in jaws, outer row enlarged and uniform; interorbital 3½ to 4, nearly level; preopercle edge with few rather large denticles. Gill rakers 6+14, short points, ½ of gill filaments, which 1⅗ in eye.

Scales 40 in lateral line to caudal base and 4 more on latter; 9 scales above lateral line, 14 below, 14 predorsal to occiput, 5 rows on cheek with preopercle flange naked. Scales with 17 basal radiating striae; apical denticles 28, obsolete, short; circuli fine.

D. XII, 9, I, fourth spine 1¾ to 1⅞ in head, second ray $1\frac{9}{10}$; A. III, 8, I, second spine 2, second ray $1\frac{9}{10}$; caudal 1⅕, hind edge slightly emarginate, truncate as expanded; least depth of caudal peduncle 2⅓; pectoral 1⅖; ventral 1⅓ to 1⅖.

Brown, silvery white below. Traces of 5 dark vertical bands, narrower than pale interspaces and ill defined, also bands not extending on belly. Iris brown. Fins all uniform brown.

Queensland.

42023 U.S.N.M. Queensland. Australian Museum. Length 128 mm.
42024 U.S.N.M. Queensland. Australian Museum. Length 108 mm.

TERAPON CAUDAVITTATUS (Richardson)

Datnia ? caudavittata Richardson, Ichth. Voy. Erebus and Terror, 1844–1848, p. 24, pl. 18, figs. 3–5. Harvey River fresh water, western Australia.

Therapon caudovittatus Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 284 (Victoria, Cape York, Harvey River); Ann. Mag. Nat. Hist., ser. 3, vol. 20, 1867, p. 58 (Victoria, Harvey River, Cape York).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Port Mackey).—Castelnau, Proc. Zool. Acclimat. Soc. Victoria, vol. 2, 1873, p. 129 (West Australia).—Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876, p. 270 (Port Darwin).—Macleay, Proc. Linn. Soc. New South Wales, vol. 2, 1878, p. 348 (Port Darwin).—Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, pp. 42, 47 (Norman River).—Klunzinger, Sitz. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, 1879, p. 350 (Port Denison).—Schmeltz, Cat. Mus. Godeffroy, No. 7, 1879, p. 39 (Port Mackey).—Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 39 (Somerset).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 361 (western, northern, and northeastern coasts).—McCulloch, Rec. West Austral. Mus., vol. 1, No. 2, 1912, p. 88 (Murray Island).

Therapon caudavittatus Waite, Rec. Australian Mus., vol. 3, 1900, p. 210 (West Australia).—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 108 (Freemantle, West Australia; Torres Straits; Murray Island; Gulf of Papua; Dutch New Guinea).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 211 (compiled).

Therapon bostockii Castelnau, Proc. Zool. Acclimat. Soc. Victoria, vol. 2, 1873, p. 128. Freemantle.

Depth 2⅖ to 2⅘; head 3⅓, width 2⅕. Snout 2⅔ in head from snout tip; eye 4 to 4½, 1⅖ to 1⅗ in snout, subequal with interorbital; maxillary reaches opposite nostrils or to eye, length 3 in head from snout tip; teeth fine, in bands in jaws; interorbital little convex, with well developed ridge; preopercle evenly and finely serrated.

Scales 52 to 56 along above lateral line to caudal base, 44 to 49 along below lateral line; 6 to 8 scales above lateral line, 14 below, 16 predorsal forward to occiput, 9 or 10 rows on cheek. Suprascapula concealed.

D. XIII, 8 or 9, fourth spine 1⅘ in head, second ray 1⅘; A. III, 8, second spine 2, first ray $1\frac{9}{10}$; caudal 1, little emarginate; least depth of caudal peduncle 2⅕; pectoral 1⅖; ventral 1¼.

Violet gray on back, lighter on sides and below white. Upper parts and sides closely spotted with round gray spots. Dorsal similarly spotted, soft fin with blackish edge. Caudal more or less spotted basally, each lobe with large black blotch obliquely across. Length 196 mm. (Richardson, Ogilby, McCulloch.)

West Australia, North Australia, Queensland, New Guinea.

TERAPON UNICOLOR Günther

Therapon unicolor Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 277. Head of Mosquito Creek near Darling Downs; Gwydir River, New South Wales; Ann. Mag. Nat. Hist., ser. 3, vol. 20, 1867, p. 58 (Fitzroy River, Rockhampton).—Schmeltz, Cat. Mus. Godeffroy, No. 4, 1869, p. 13 (Rockhampton); No. 5, 1874, p. 23 (Queensland); No. 6, 1877, p. 12 (Burnett River); No.

7, 1879, p. 39 (Queensland).—Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 32 (S. Lat. 27° 0′ E., Long. 144°, Queensland; Mary River, Tiaro).—Macleay, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. 15 (Warialda); vol. 5, 1881, p. 366 (copied).—Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Queensland).—Stead, Proc. Linn. Soc. New South Wales, vol. 34, 1909, p. 116 (Corella).—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 109, pl. 11, fig. 1 (Eidsvold, Rockhampton, Inkerman, Cromarty, Lake Elphinstone, types of *Therapon elphinstonensis*, Stannary Hills, Normanton, Gregory River, Barcaldine, Goondiwindi, Condamine River, type of *Therapon idoneus*).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 211 (compiled).

Therapon unicola Kent, Great Barrier Reef, 1893, p. 369 (Queensland). (Error.)

Datnia brevispinis Steindachner, Sitz. Ber. Akad. Wiss. Wien, vol. 56, pt. 1, 1867, p. 309. Cape York, Australia.

Therapon truttaceus Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 366. Endeavour River.—Zietz, Zool. Horn Exp., vol. 2, 1896, p. 176 (Red Bank Creek, Finke River, Palm Creek, Walker's Gorge).

Terapon truttaceus Waite, Trans. Roy. Soc. South Australia, vol. 38, 1914, p. 446 (Central Australia).

Therapon longulus Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 367. Fresh waters inland from Port Darwin.

Therapon elphirstonensis De Vis, Proc. Roy. Soc. Queensland, vol. 1, 1884 (1885), p. 87. Lake Elphinstone.

Therapon idoneus Ogilby, Proc. Roy. Soc. Queensland, vol. 20, 1907, p. 37. Upper Condamine River, South Queensland.

Depth 3¼ to 3⅖; head 2⅞, width 1⅞ to 2. Snout 3⅔ in head from snout tip; eye 4 to 5⅕, 1¼ to 1⅖ in snout, 1 to 1⅕ in interorbital; maxillary reaches eye, expansion 1⅘ to 2 in eye, length 2⅞ to 3 in head from snout tip; teeth in rather broad villiform bands in jaws, with outer row well enlarged and uniform; interorbital 4⅓ to 5⅛ in head from snout tip, broadly and but slightly convex; preopercle edge moderately denticulate. Gill rakers 9 + 12, lanceolate, ½ of gill filaments, which 1⅗ in eye.

Scales 46 in lateral line to caudal base and 4 more on latter; 9 scales above lateral line, 15 below, 18 predorsal to occiput, 6 rows on cheek to preopercle ridge. Scales with 16 basal radiating striae; apical denticles 12, with 2 or 3 transverse series of basal elements; circuli fine.

D. XII, 11, i, fourth spine 2⅔ to 3 in total head length, fourth ray 2⅕; A. III, 8, i, second spine 3 to 4, third ray 2¼ to 2⅖; caudal 1¼, emarginate behind, only slightly so as expanded; least depth of caudal peduncle 3; pectoral 1¾ to 1⅘; ventral 1⅔.

Brown above, paler to whitish with silvery below. Fins all dull brown. Iris brownish.

Australia, Northern Territory, Queensland, New South Wales.

42034. U.S.N.M. Bourke, New South Wales. Australian Museum. Length 170 mm.

42035 U.S.N.M. Bourke. Australian Museum. Length 173 mm.

TERAPON PLUMBEUS (Kner)

Datnia plumbea Kner, Sitz. Ber. Akad. Wiss. Wien, vol. 49, 1864, p. 484. "St. Paul Island"; Reise Novara, Fische, 1865, p. 48, pl. 3, fig. 1 ("Java").—Herre, Copeia, No. 3, Sept. 30, 1930, p. 76 (Laguna de Bay, near Manila).

Therapon (*Datnia*) *plumbeus* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 115 (on Kner).

Mesopristes plumbeus Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1918, p. 36 (Philippines); Copeia, No. 58, June 18, 1918, p. 63 (Philippines).

Therapon plumbeus Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 281 (Santa Maria, Bangui, San Fernando, Orani, Philippines).

Therapon brevispinis (not Steindachner) Peters, Monatsb. Akad. Wiss. Berlin, 1868, p. 256. Quinogoa River, Bulacan Province, Luzon, Philippines.—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Laguna de Bay, Luzon).

Therapon brachycentus Peters, Monatsb. Akad. Wiss. Berlin, 1869, p. 704 (on Peters, 1868).

Therapon (*Datnia*) *brachycentrus* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 115 (copied).

Depth 2½ to 2¾; head 3 to 3⅙, width 1⅞ to 2. Snout 3¼ to 3½ in head; eye 3⅔ to 4, 1⅛ to 1⅓ in snout, greater than interorbital in young to equal with age; maxillary reaches eye or ⅕ in eye, expansion 2 to 2⅕, length 3 to 3¼ in head; teeth villiform, in moderately wide bands in jaws, outer row little enlarged; interorbital 3¾ to 3⅘, nearly flat; preopercle edge finely serrated. Gill rakers 9 or 10 + 18 or 19, lanceolate, ½ of gill filaments and latter 1⅗ in eye.

Scales 43 to 50 in lateral line to caudal base and 3 or 4 more on latter; 7 or 8 scales above lateral line, 13 to 15 below, 16 to 20 predorsal forward to occiput, 5 rows on cheek to preopercle ridge. Suprascapula not exposed. Scales with 18 to 21 basal radiating striae; apical denticles 30 to 32, rather slender small points, with 10 or 11 transverse series of fine basal elements; circuli fine.

D. XII, 8, i to 10, i, fourth spine 1¾ to 1⅞ in head, first ray $1\frac{9}{10}$ to 2⅓; A. III, 8, i, second spine 2 to 2⅖, first ray 1⅘ to 1⅞; caudal 1⅕ to 1¼, slightly emarginate behind; least depth of caudal peduncle 2⅞ to 3; pectoral 1⅔ to 1¾; ventral 1⅖ to 1⅗.

Pale olive brownish above, each row of scales with slightly darker line. Spinous dorsal edge dusky, also soft dorsal, anal and caudal tinted with dusky, other fins pale. Iris pale slaty.

Philippines.

Two examples. From fish pond 1½ miles west of Dangalil. Length 120 to 134 mm.

Twenty-six examples. Laguna de Bay, at head of river. June 21, 1908. Length 30 to 79 mm.

Four examples. Malabon Harbor. August 8, 1908. Length 74 to 99 mm.

10629 to 10631, 20310. Manila market. June 17, 1908. Length 118 to 142 mm.

11439, 11441, 11444. Manila market. December 12–18, 1907. Length 118 to 139 mm.

18372 to 18374. Santa Cruz River. December 17, 1907. Length 64 to 147 mm. 8 examples.

A1010. Buka Buka Island, Gulf of Tomini, Celebes. November 20, 1909. Length 128 mm.

28561. U.S.N.M. Lucon. Mus. Hist. Nat. Paris. Length 80 to 90 mm. 3 examples. As *Therapon argenteus.*

47578 to 47592 A.N.S.P. Philippines. Commercial Museum of Philadelphia. Length 116 to 140 mm.

Genus PELATES Cuvier

Pelates (CUVIER and VALENCIENNES) CUVIER, Règne Animal, vol. 2, ed. 2, 1829, p. 148. Type *Pelates quinquelineatus* (CUVIER and VALENCIENNES) CUVIER, monotypic.

Teeth compressed, triserial above, biserial below, entire or simple. Gill membranes joined with isthmus.

ANALYSIS OF SPECIES

a^1. PELATES. Gill rakers 16 to 18+21 or 22.
  b^1. Large black blotch on dorsal between third and eighth spines; dark shoulder blotch usually present ________ **quadrilineatus.**
  b^2. Dorsal fin without black blotch; no dark shoulder mark ______ **sexlineatus.**
a^2. RHYNCHOPELATES, new subgenus. Gill rakers 8+13; 4 dark longitudinal bands on back, with age each having alternating incomplete or broken band, parallel, but less conspicuous ________ **oxyrhynchus.**

Subgenus PELATES Cuvier

Gill rakers 16 to 18+21 or 22.

PELATES QUADRILINEATUS (Bloch)

Holocentrus quadrilineatus BLOCH, Naturg. Ausländ. Fische, vol. 4, 1790, p. 82, pl. 238, fig. 2. The Orient.—WALBAUM, Artedi Pisc., vol. 3, 1792, p. 642 (on BLOCH).—FORSTER, Fauna Indica, 1795, p. 16.—LACÉPÈDE, Hist. Nat. Poiss., vol. 4, 1802, pp. 339, 380 (East Indies).

Therapon quadrilineatus CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 134 (no locality).—RICHARDSON, Ichth. China Japan, 1846, p. 239 (Chinese Sea).—GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 282 (copied).—KNER, Reise Novara, Fische, 1865, p. 46 (Java, Singapore, Madras, Manila).—PETERS, Monatsb. Akad. Wiss. Berlin, 1868, p. 256.—DAY, Fishes of India, pt. 1, 1875, p. 70, pl. 18, fig. 5.—MARTENS, Preuss. Exp. Ost Asien, 1876, p. 386 (Manila).—DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 507.—THURSTON, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).—WEBER, Zool. Ergebn. Reise Nederland. Ost. Ind., vol. 3, 1894, p. 408 (Tanette River mouth and Pare-Pare, Celebes).—ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 473 (Luzon, Manila Bay, Cebu).—DUNCKER, Mitt. Naturhist. Mus. Hamburg, vol. 21, 1903 (1904), p. 149 (Singapore).—STEAD, Fishes of Australia, 1907, p. 122 (New South Wales, Queensland).—JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 258 (Cuyo, Lubano, Iloilo, Aparri).—SEALE, Philippine Journ. Sci., vol. 5, No. 4, Oct., 1910, p. 277 (Sandakan, Borneo).—JORDAN and THOMPSON, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 539 (Riu Kiu).—FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 32 (Takao).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 233 (Delagoa Bay); 1927, p. 281 (Bulan).—PILLAY, Journ. Bombay Nat. Hist. Soc., vol. 33, No. 2, Feb. 15, 1929, p. 366 (Travancore).

Therapon (*Pelates*) *quadrilineatus* Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 117 (Sumatra, Singapore, Bintang, Banka, Biliton, Java, Celebes, Halmaheira, Ceram, Timor, Philippines).—Klunzinger, Fische Roth. Meer., 1884, p. 26.

Therapon 4-lineatus Gorgoza, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 17, 1888, p. 284 (Manila Bay; Cebu).

Terapon quadrilineatus Jordan and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 24 (Manila).—Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 83 (Bulan; San Fabian).—Jordan and Starks, Ann. Carnegie Mus., vol. 11, Nos. 3–4, 1917, p. 450 (Ceylon, Formosa, Philippines, Queensland).

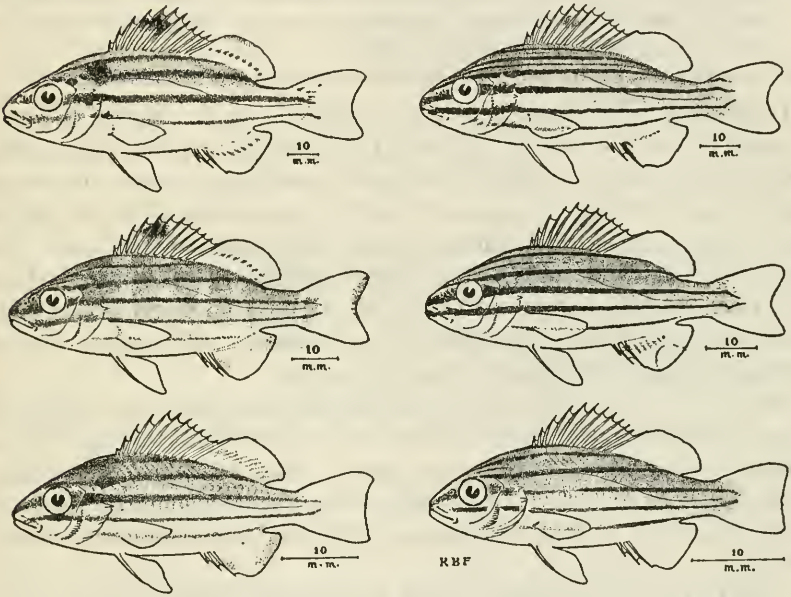
10 m.m.
10 m.m.
10 m.m.
10 m.m.
10 m.m.
RBF
10 m.m.

Figure 29.—Pelates quadrilineatus (Bloch). Variation of color markings

Pelates quadrilineatus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 146, pl. 55 (Port Jackson).—Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, 1830, p. 223 (New South Wales).—Griffiths, Animal Kingdom Cuvier, vol. 10, 1834, pl. 15, fig. 2 [opposite p. 121].—Valenciennes, Règne Animal, Cuvier, Poiss. Ill., 1839, pl. 12, fig. 1.—Guérin, Iconogr. Règne Animal, Poiss., vol. 1, 1829–1844, pl. 7, fig. 2.—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 125 (compiled).—McCulloch, Biol. Res. Endeavour, vol. 4, pt. 4, 1916, p. 183 (Northeast of Bustard Head; Bowen).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 609 (Hong Kong), p. 642 (Bulan).

Therapon xanthurus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 135. Java.

Pelates sexlineatus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 149 "Hawaiian Islands." (Not Port Jackson specimen.)

Pelates quinquelineatus Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, Nov. 12, 1831, p. 223 (Port Jackson).

Helotes polytaenia Bleeker, Nat. Tijds. Nederland. Indië, vol. 6, 1854, p. 53. Sindangole, Halmaheira.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 285 (no locality).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (14) 292, fig. 2.

Therapon cuvieri Bleeker, Nat. Tijds. Nederland. Indië, vol. 6, 1854, p. 211. Kupang.—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 282 (New South Wales, Port Jackson, Sydney, Port Essington, Australia).—Playfair, Fishes of Zanzibar, 1866, p. 23 (Zanzibar; Aden).—Bleeker, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, pl. (37) 315, fig. 2.—Macleay, Proc. Linn. Soc. New South Wales, vol. 2, 1878, p. 348 (Port Darwin).—Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. 370 (Port Jackson).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—Meyer, Anal. Soc. Españ. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Ternate).—Kent, Great Barrier Reef, 1893, p. 369 (Queensland).—Waite, Sea Fisher. Rep. Thetis, 1898, p. 23 (off Shoalhaven Bight in 20 fathoms).—Jatzow and Lenz, Abh. Senckenberg. Naturf. Ges., vol. 21, 1899, p. 501 (Kibueni Island, Zanzibar).—Seale, Philippine Journ. Sci., vol. 9, No. 1, 1914, p. 66 (Hong Kong).

Therapon cuvierii Pöhl, Cat. Mus. Godeffroy, No. 9, 1884, p. 27 (Viti).

Depth 2⅞ to 3; head 3 to 3⅕, width 1⅞ to 2. Snout 2⅞ to 3 in head; eye 3⅓ to 3⅖, 1⅛ to 1⅕ in snout, greater than interorbital in young; maxillary not quite reaching to eye in young, reaches eye with age, expansion 3 to 3⅕ in eye, length 3⅓ to 3⅖ in head; teeth fine, simple, conic, in 4 or 5 irregular rows in jaws, with outer row enlarged; palate and tongue toothless; interorbital 3⅘ to 4⅛, very slightly convex; 30 to 35 denticles along preopercle edge, larger at angle; lower preorbital edge serrated. Gill rakers 18+22, lanceolate, equal gill filaments or 2⅕ in eye.

Scales 70 to 73 in lateral line to caudal base and 5 to 7 more on latter; 12 to 14 scales above lateral line, 23 below, 15 to 17 predorsal forward to occiput, 5 rows on cheek. Suprascapula denticulate. Scales with 10 to 19 basal radiating striae; apical denticles 12 to 27, moderate, with 2 or 3 transverse series of basal elements; circuli very fine.

D. XII, 10, I, fifth spine 1½ to 1¾ in head, first ray 1⅘ to 1⅞; A. III, 10, I, second spine 2¼ to 2½, first ray 1¾ to 1⅘; caudal 1⅛ to 1⅕, little emarginate, truncate as expanded; least depth of caudal peduncle 3 to 3⅛; pectoral 1⅖ to 1½; ventral 1⅓ to 1⅖.

Back light drab brown, side below and under surface whitish, with silvery reflections. Six horizontal deep brown bands; first along spinous dorsal base; second from predorsal to soft dorsal front; third from above eye to upper edge of caudal peduncle; fourth from snout tip to eye and then across opercle and flank to median upper caudal rays basally; fifth from maxillary end to pectoral axil and to median lower caudal rays basally; sixth from below pectoral base till above soft anal. Iris yellowish brown. Fins all pale brown. Large blackish blotch on front of spinous dorsal medianly. Soft dorsal with outer border slightly darker broadly and basally dark blotch before each ray. Diffuse large dark blotch, variably present in preserved specimens, on side of predorsal about size of eye.

Arabia, Zanzibar, Delagoa Bay, India, Ceylon, Singapore, East Indies, Philippines, Formosa, Riu Kiu, North Australia, Queensland, New South Wales.

21241 to 21243. Below mouth of Mindanao River, Cotabato, Mindanao. May 20, 1908. Length 48 to 85 mm.

22387 and 22592. Canmahala Bay, Luzon. March 11, 1909. Length 70 to 75 mm.

20273, 20274. Cataingan Bay, Dumurug Point, Masbate Island. April 18, 1908. Length 101 to 125 mm.

5958. Cavite market. December 1, 1908. Length 119 mm. [746].

12662. Cebu market. April 4, 1908. Length 160 mm.

4202, 4203 [D. 5361]. Corregidor Light, S. 89° W., 7.2 miles (14° 24′ 15″ N., 120° 41′ 30″ E.), Manila Bay. February 9, 1909. Length 115 to 130 mm.

7533 to 7535, 11726. Cotabato, Mindanao. May 20, 1908. Length 86 to 118 mm.

22873. Beach east of Davao town, Gulf of Davao. May 16, 1908. Length 108 mm.

12662. Cebu market. April 4, 1908. Length 160 mm.

20850. Mansalay, Mindoro. June 4, 1908. Length 62 to 90 mm. 4 examples.

8447, 21637, 21638, 31639, 22171. Port Jamelo, southern Luzon. July 13, 1908. Length 71 to 96 mm.

22625[576]. Port Palapag. June 3, 1909. Length 104 mm. Entire body and head, except median line of belly, bright brassy green; body marked by 6 longitudinal stripes of olive green; first dorsal light yellow-green, with large dusky black area; second dorsal plain yellow-green, with dusky margin; caudal and anal same; ventral gamboge; pectoral pale green.

21624. River at Pasacao, Ragay Gulf, Luzon. March 9, 1909. Length 54 mm.

11321. San Roque, Leyte. July 29, 1909. Length 105 mm.

8808, 8809, 21674 to 21676. Santiago River, Luzon. February 2, 1909. Length 110 to 126 mm.

20628 to 20631. Sirinao Island, Nakoda Bay, Palawan. December 30, 1909. Length 41 to 77 mm.

21233. Surigao, Mindanao. May 8, 1908. Length 99 mm.

20688. Ulugan Bay, Palawan. December 28, 1908. Length 114 mm.

10858. Varadero Bay, southern Luzon. July 23, 1908. Length 68 mm.

5283, 5284, 20862. Sandakan, Borneo. March 21, 1908. Length 81 to 94 mm.

6536 U.S.N.M. Hong Kong. William Stimpson. Length 148 mm.

12675 U.S.N.M. South Seas. British Museum. Length 62 mm. As *Therapon trivittatus.*

28653 U.S.N.M. No locality. Australian Museum. Length 182 mm. As *Therapon cuvieri.*

32716 U.S.N.M. Indian Archipelago. Royal Museum Leiden. Length 145 mm.

42028 U.S.N.M. Port Jackson, New South Wales. Australian Museum. Length 214 mm. As *Therapon cuvieri.*

42029 U.S.N.M. Port Jackson. Australian Museum. Length 213 mm. As *Therapon cuvieri.*

56072 U.S.N.M. San Fabian, Philippines. Bureau of Fisheries (3827). Length 140 mm.

56158 U.S.N.M. Bulan, Philippines. Bureau of Fisheries (3708). Length 50 to 52 mm. 2 examples.

56307 U.S.N.M. Manila. Dr. G. A. Lung. Length 43 to 80 mm. 6 examples.

59954 U.S.N.M. Port Jackson, New South Wales. D. G. Stead. Length 168 to 183 mm. 2 examples.

59978 U.S.N.M. Port Jackson. D. G. Stead. Length 108 to 136 mm. 2 examples.
72183 U.S.N.M. Lubang, Philippines. R. C. McGregor. Length 128 mm.
72242 U.S.N.M. Iloilo. R. C. McGregor. Length 100 mm.
72365 U.S.N.M. Aparri. R. C. McGregor. Length 84 mm.
76626 U.S.N.M. Formosa. Dr. F. Baker. Length 150 and 163 mm. 2 examples.
84189 U.S.N.M. Cebu, Philippines. Dr. F. Baker. Length 114 mm.

PELATES SEXLINEATUS (Quoy and Gaimard)

Pristipoma sexlineatum Quoy and Gaimard, Voy. Uranie, Zool., Dec. 18, 1824, p. 320. Shore of Sydney, at Port Jackson.

Pelates sexlineatus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 149 (Port Jackson; not Sandwich Island specimen).—Guérin, Inconogr. Règne Anim. Cuvier Poiss., 1829–1844, p. 7, fig. 4 (head).—Ogilby and McCulloch, Mem. Queensland Mus., vol. 5, 1916, p. 125 (Sydney; Queensland).—McCulloch, Biol. Res. Endeavour, vol. 4, pt. 4, 1916, p. 183 (off Boomerang Hill and Bustard Head, Queensland).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 212 (compiled).

Helotes sexlineatus Valenciennes, Règne Anim. Cuvier, Ill. Poiss., 1839, pl. 12, fig. 3.

Therapon sexlineatus Steindachner, Sitz. Ber. Akad. Wiss. Wien, vol. 53, pt. 1, 1866, p. 429 (Port Jackson).

Pelates quadrilineatus (not Bloch) Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 146, pl. 55. Port Jackson.

Therapon quadrilineatus Ogilby, Edible Fish. New South Wales, 1893, p. 26.—Waite, Mem. New South Wales Natural. Club, vol. 2, 1904, p. 33.—Stead, Edible Fish. New South Wales, 1908, p. 73.

Pelates quinquelineatus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 148. Port Jackson.

Therapon cuvieri (part) Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 282.—Castelnau, Proc. Linn. Soc. New South Wales, vol. 2, 1878, p. 348 (Port Darwin).—Macleay, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 362 (Port Jackson; east and north coasts).—Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1907 (1908), p. 433.

Depth 2⅘; head 3⅓. Snout 2⅖ in head; eye 4, 1⅔ in snout, 1⅛ in interorbital; maxillary reaches hind nostril, length 3½ in head; interorbital 3⅔, little elevated; preopercle edge denticulated.

Scales (72 in lateral line on figure; 8 above, 22 below, 6 rows on cheek).

(D. XII, 10 on figure, fourth spine 2⅖ in head, first ray 2⅗; A. III, 10, third spine 3, first ray 2⅕; caudal 1⅕, slightly emarginate; least depth of caudal peduncle 2⅘; pectoral 1½; ventral 1⅔.)

Back olive, slightly yellowish olive along middle of sides, below white. Iris brown. Five dusky brown horizontal bands, lowest from maxillary to caudal base. Fins uniform dull brown. (Cuvier.)

Queensland, New South Wales.

Rhynchopelates, new subgenus[31]

Type.—Therapon oxyrhynchus Schlegel.

Diagnosis.—Differs from subgenus *Pelates* in the fewer gill rakers, 8 + 13. Also body with 4 dark longitudinal bands having alternating incomplete or paler band in each intervening area.

PELATES OXYRHYNCHUS (Schlegel)

Therapon oxyrhynchus Schlegel, Fauna Japon, Poiss., pt. 1, 1842, p. 16, pl. 6, fig. 3. Bays of southern Japan.—Richardson, Fishes of China Japan, 1846, p. 239 (China and Japan).—Bleeker, Act. Soc. Sci. Ind. Néerland., No. 3, vol. 3, 1857–1858, p. 2 (Kioesio), p. 5 (Japan).—Günther, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 281 (Japan, China).—Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Hakuri; Japan).—Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math.-nat. Klasse, vol. 48, 1884, p. 10 (Tokyo).—Meyer, Añal. Soc. Espan. Hist. Nat., Madrid, vol. 14, 1885, p. 13 (Manado, Celebes).—Rutter, Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 75 (Swatow, China).—Ishikawa and Matsuura, Prelim. Cat. Fish. Mus. Tokyo, 1897, p. 55.—Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 355 (Tokyo); Annot. Zool. Japon., vol. 3, 1901, p. 78 (Nagasaki, Yokohama, Shimoda).—Smith and Pope, Proc. U. S. Nat. Mus., vol. 31, 1907, p. 475 (Kochi, Matsushima Bay).—Franz, Abh. Bayer, Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 46, pl. 5, fig. 31 (Yokohama).—Jordan and Thompson, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 538 (Shimiju, Suruga, Wakanoura, Kagoshima, Nagasaki, Akune, Nagaoka, Tokyo, Swatow).—Izuka and Matsuura, Cat. Zool. Spec. Tokyo Imp. Mus., Vertebr., 1920, p. 150 (Tsu, Ise).

Therapon oxyrhynchos Bleeker, Verh. Batav. Genootsch., No. 4, vol. 26, 1857, pp. 4, 64 (Nagasaki).

Therapon oxyrhynchus Martens, Preuss. Exp. Ost Asien, 1876, p. 386 (Yokohama).

Therapon oxirhynchus Elera, Cat. Fauna Filip., vol. 1, 1895. p. 472 (Luzon, Cavite, Santa Cruz).

Pelates oxyrhynchus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 213 (compiled).

Depth 2⅔ to 3; head 2⅗ to 3, width 2⅛ to 2⅕. Snout 2¾ to 3⅓ in head; eye 3½ to 5, 1 to 2 in snout, 1⅕ in interorbital or greater than interorbital in young; maxillary reaches opposite hind nostril, to eye in young, expansion 2 in eye, length 3⅛ to 3⅕ in head; teeth small, in bands in jaws of 6 or 7 irregular series; interorbital 4⅕ to 4⅖, broadly convex; preopercular edge denticulate. Gill rakers 8+16, lanceolate, 1⅔ in gill filaments, which equal eye.

Scales 70 in lateral line to caudal base and 7 more on latter; tubular scales 50 in lateral line to caudal base and 5 more on latter; 15 scales above lateral line, 22 below, 17 predorsal to occiput, 7 rows on cheek to preopercle ridge. Suprascapula denticulate. Scales with 8 basal radiating striae and 2 incomplete auxiliaries; apical denticles 27, slender, strong, basal elements in 12 transverse series; circuli very fine.

---

[31] 'Ρύγχος, snout; *Pelates;* as the snout somewhat extended.

D. XII, 10, I, third spine $2\frac{1}{4}$ to $2\frac{7}{8}$ in head, second ray $2\frac{1}{5}$ to $2\frac{2}{3}$; A. III, 8, I, second spine $2\frac{1}{4}$ to $2\frac{7}{8}$, second ray $2\frac{1}{8}$ to $2\frac{3}{5}$; caudal $1\frac{1}{2}$ to $1\frac{2}{3}$, slightly emarginate, nearly truncate as expanded; least depth of caudal peduncle $3\frac{1}{8}$ to $3\frac{1}{3}$; pectoral $1\frac{2}{3}$ to $2\frac{1}{10}$; ventral $1\frac{3}{5}$ to $1\frac{9}{10}$.

Back light brown, lower sides and under surface of body silvery white. On back 4 dusky brown to blackish longitudinal bands; third from snout tip through eye; with age between each complete dark band an imperfect or broken similar band, parallel but less conspicuous. Membrane of spinous dorsal marginally broadly dusky to blackish, also some dusky basally and on soft fin forms subbasal blackish band. Caudal with several narrow parallel blackish lines on each lobe horizontally. Dark subbasal band on anal.

East Indies, Philippines, China, Japan. A handsome species, easily known by its alternating dark longitudinal bands on the back.

22523 U.S.N.M. Kadzosa, Japan. Japanese Government. Length 180 mm.
44916 U.S.N.M. Japan. Japanese Government. Length 238 to 253 mm. 2 examples.
59729 U.S.N.M. Kochi, Japan. Dr. H. M. Smith. Length 172 mm.
59730 U.S.N.M. Matsushima Bay. Dr. H. M. Smith. Length 150? mm.
71178 U.S.N.M. Akune, Satsuma, Japan. *Albatross* Collection 1906. Length 35 to 70 mm. 10 examples.
71179 U.S.N.M. Shimizu, Japan. *Albatross* Collection. Length 135 to 147 mm. 2 examples.
71300 U.S.N.M. Kagoshima, Japan. *Albatross* Collection. Length 120 to 178 mm. 2 examples.
79450 U.S.N.M. Nagasaki, Japan. Jordan and Snyder. Length 163 to 179 mm. 3 examples.
75451 U.S.N.M. Nagasaki. Jordan and Snyder. Length 128 to 137 mm. 2 examples.
82140 U.S.N.M. Muyazahi, Japan. Rev. C. A. Clark. Length 74 mm.

Genus HELOTES Cuvier

Helotes (CUVIER and VALENCIENNES) CUVIER, Règne Animal, vol. 2, ed. 2, 1829, p. 148. Type *Terapon sexlineatus* QUOY and GAIMARD, monotypic.

Pseudohelotes GUIMARAES, Jorn. Soc. Sci. Math. Lisboa, vol. 8, 1881 (1882), p. 222. Type *Pseudohelotes guntheri* CAPELLO, monotypic.

Teeth compressed, tridentate.

With the exception of *Pseudohelotes guntheri* Capello, which was described from Setubal, all the species are Indo Australasian.

ANALYSIS OF SPECIES

a^1. Depth $2\frac{1}{4}$; head $3\frac{2}{5}$ to $3\frac{3}{5}$; color uniform______________________**lorentzi.**
a^2. Depth $3\frac{1}{2}$ to 4; 5 black horizontal bands, also black blotch at shoulder. **sexlineatus.**

HELOTES LORENTZI Weber

Helotes lorentzi WEBER, Notes Leyden Mus., vol. 32, 1910, p. 236. Lorentz River, New Guinea; Nova Guinea, vol. 9, pt. 4, 1913, p. 586, fig. 36 (Lorentz River at Regen Island).—FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 212 (compiled).

Depth 2¼; head 3⅖ to 3⅗. Snout 2¾ in head; eye 4 to 4½, 1½ in snout, 1½ in interorbital; maxillary reaches half way in snout, length 5¼ in head; teeth tridentate, in about 3 rows; palate toothless; interorbital convex; preopercle edge serrate.

Scales 52 to 54 in lateral line; 6 or 7 scales above lateral line, 13 or 14 below, 15? predorsal, 5 rows on cheek to preopercle ridge.

D. XIII or XIV, 11 to 13, sixth spine 1⅔ in head, first ray 2⅔; A. III, 9, second spine 2, first ray 2⅓; caudal 1⅕, little emarginate behind; least depth of caudal peduncle 2; pectoral 1½; ventral 1¼.

Dark brown, especially back, scales on side and belly with sheen on each medially. Unpaired fins blackish, with light edges. Pectoral dark basally, light terminally. Length 204 mm. (Weber.)

HELOTES SEXLINEATUS (Quoy and Gaimard)

Terapon sexlineatus QUOY and GAIMARD, Voy. Uranie, Zool., Jan. 29–May 26, 1825, p. 340, pl. 60, fig. 1. Shark Bay, Australia.

Helotes 6 lineatus CUVIER, Règne Animal, vol. 2, ed. 2, 1829, p. 144 (name only).

Helotes sex lineatus CUVIER, Hist. Nat. Poiss., vol. 3, 1829, pl. 56 (Australia and Shark Bay).

Helotes sexlineatus GÜNTHER, Cat. Fish. Brit. Mus., vol. 1, 1859, p. 285 (copied).—BLEEKER, Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 31 (Manila Bay).—KNER, Reise Novara, Fische, 1865, p. 46, pl. 3, fig. 1 (Java and Manila).—CASTELNAU, Proc. Zool. Acclimat. Soc. Victoria, vol. 2. 1873, p. 129 (Western Australia); Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. 370 (Port Jackson).—KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 153 (Singapore).—WEBER, Semon's Zool. Forsch. Reis. Austral., vol. 5, 1895, p. 263 (Thursday Island).—PELLEGRIN, Bull. Soc. Zool. France, vol. 30, 1905, p. 84 (Baie d'Along, Tonkin).—FOWLER, Copeia, No. 58, June 18, 1918, p. 63 (Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 642 (Philippines; Melbourne, Australia).

Pelates sexlineatus CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 149 (Sandwich Islands; not Port Jackson specimen).—FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 281 (Philippines).

Therapon (*Helotes*) *sexlineatus* BLEEKER, Atlas Ichth. Ind. Néerland., vol. 7, 1873–1876, p. 118 (Singapore, Bintang, Biliton, Java?, Ceram, Philippines); vol. 8, 1876–1877, pl. (64)342, fig. 5.

Depth 3½ to 4; head 3⅘ to 4, width 1⅔ to 1⅘. Snout 3⅓ to 3⅖ in head; eye 4 to 4⅛, slightly greater than snout to 1¼ in snout, 1 to 1¼ in interorbital, maxillary reaches beyond hind nostril or to eye, expansion 3½ to 4 in eye, length 3½ to 3⅗ in head; teeth compressed, expanded terminally somewhat with 3 denticles, in 5 irregular rows; interorbital 3⅓ to 4¼, broadly convex; preopercle edge with 34 denticles, little larger around corner; lower opercular spine 2 to 2⅛ in eye. Gill rakers 7+16, lanceolate, ½ of gill filaments which 3⅛ in eye.

Scales 90 to 98 in lateral line to caudal base and 5 to 8 more on latter; tubular scales 80 to 83 in lateral line and 4 to 8 more on latter; 17 scales above lateral line, 19 or 20 below, 19 to 21 predorsal to occiput, not crossing median line, 6 rows in cheek. Suprascapula inconspicuous, entire. Scales with 13 basal radiating striae; apical denticles 12 to 20, minute, with 11 to 13 transverse basal elements; circuli very fine.

D. XI or XII, 10 I, or 11, I, fifth spine 1⅖ to 1⅗ in head, first ray 1⅔ to 1¾; A. III, 10, I or 11, I, third spine 2⅞ to 3, first ray 1⅗ to 1⅘; caudal 1, emarginate, with upper lobe little longer; least depth of caudal peduncle 2⅘ to 3; pectoral 1½; ventral 1¼ to 1⅓.

Back brown, with steel blue and lilac reflections, sides and lower surfaces white. Whole body with silvery reflections. Large dusky brown blotch ellipsoid, little larger than eye, above suprascapula. Four deep brown horizontal blackish bands; first from middle of interorbital to soft dorsal origin; second from above nostrils, above eye to middle of soft dorsal base; third from snout tip to eye and back along caudal peduncle to bases of upper median caudal rays; fourth from maxillary to pectoral axil and back to median lower caudal rays basally. Iris yellowish white. Spinous dorsal broadly blackish, basally whitish and spines burnished with silvery white. Soft dorsal with front edge and apex dusky and medial horizontal pale brown band, fin otherwise whitish. Caudal whitish, with brownish edge above and behind, and 4 pale brown transverse diffuse bands. Other fins whitish.

Singapore, Tonkin, East Indies, Philippines, Queensland, West Australia, New South Wales.

22361. Cavite market, Philippines. June 14, 1908. Length 90 mm.

9746, 21600. Kowloon market, China. October 5, 1908. Length 188 to 212 mm. 2 examples.

INDEX

[The page numbers of the principal entries are set in *italics*. Asterisk indicates page on which illustration is given.]

Page
Abuhamrur 65
abumgaterin, Sciaena 254
Acanthocephalus orientalis 85
Acerina (Cernua) bidyana 343
aculeatus, Serranus 193
acutirostris, Therapon 348
adetii, Diacopus 167
  Lutjanus 167
adustus, Pempheris 60
  Pseudochromis 28
    (Pseudochromis) 29
affine, Diagramma 231, 235
affinis, Liopempheris 56
  Pempheris 56, 57
  Plectorhinchus 235, 237
  Scolopsis 286
alalaua, Priacanthus 67, 69, 75, 77
alboguttata, Diacope 113
  Genyoroge 113
albovittatum, Diagramma 242
albovittatus, Plectorhinchus 233, *242*
  Plectorhynchus 242
alligatoris, Terapon 351
  Therapon 327, *351*
aloha, Rooseveltia 184
Alphestes gembra 98
alta, Diagramma 235
altera, Cichlops melanotaenia var 13
alticlarens, Priacanthus 78
amabile, Diagramma 232
Amblyopus sagitta 27
amboinensis, Genyoroge 151
  Lutianus 151
  Lutjanus 151
  Mesoprion 151
amicium, Diagramma 232
amoenus, Platyinius 188
Anabas 326
analis, Diacope 123
  Hapalogenys 269
  Mesoprion 123
  Pempheris 50, *52*
anas, Pristipoma 321, 322
angulus, Diacope 152
annae, Nematochromis *41*
annularis, Diacope 166
  Lutianus 166
  Lutjanus 166
  Mesoprion 166
Anomalodon 303
  incisus 303, 308
anthiam, Labrum 195
Page
Anthias berycoides 85
  bilineatus 292
  boops 65, 77
  diagramma 231, 262
  filamentosus 191
  grunniens 304, 305, 306
  hamrur 74
  japonicus 298
  johnii 87, 90, 93
  macrophthalmus 75
  maculatus 309
  multidens 189
  oculatus 195
  orientalis 243
  vosmaeri 298
  vosmari 298
  vosmeri 270, 298
  zonatus 183, 189
Aphareus 82, *199*
  caerulescens 196, 197
  flavivultus 196, 197, 198
  (Sacrestinus) flavivultus 197
  furcatus 196, *197*, 198
  roseus 187
  rutilans 196, *198*
  (Fares) rutilans 198
  thompsoni 198, 199
aporognathus, Diagramma 230
Aprion 82, *184*
  brevirostris 191
  filamentosus 192
  konekonis 185
  microdon 187, 192
  microlepis 187, 188
  (Aprion) microlepis 190, 191
  pristipoma 187, 189
  (Aprion) pristipoma 189
  roseus 187
  sieboldii 192
  typus 189
  virescens 184, *185*
  (Aprion) virescens 185
Apsilus 82, *182*
  brighami 184
  dentatus 183
  fuscus 182, *183*
  microdon 187, 192
  zonatus 183
aquilonaris, Etelis 193
arabica, Perca 252
aratus, Mesoprion 87
arenatus, Priacanthus 66, *69*, 76

Page

- argentata, Perca 98
  - Sciaena 98
- argentatus, Labrus 98
- argentea, Datnia 326, 347
  - Perca 339
  - Sciaena 303, 311
- argenteum, Pristipoma 311
  - var. nageb 312
- argenteus, Autisthes 325, 329
  - Bodianus 201
  - Caesio 201
  - Gymnocaesio *201*
  - Kurtus 53
  - Mesoprion 145, 146
  - Parapempheris 47
  - Parapriacanthus 47, *49*
  - Pomadasis 311
  - Pomadasys 304, *311*, 316
  - Priacanthus 67
  - Terapon 327, *347*
  - Therapon 341, 347, 358
    - (Datnia) 348
- argentimaculata, Diacope 97
  - Sciaena 97
- argentimaculatus, Lutianus 97
  - Lutjanus 88, *97*, 171
    - (Mesoprion) 98
  - Mesoprion 97
- argyreum, Pristipoma 305, 307
- argyreus, Pomadasis 305
  - Pomadasys 305
- argyrogrammicus, Etelis 189
  - Pristipomoides 187, *189*
  - Serranus 189, 190
- argyrosoma, Lycogenis 270, 300
- argyrosomus, Scolopsis 299
- Arnillo auricilla 191
- arnillo, Mesoprion 183
- asper, Boops 65
- Assiculus 19, 20, *21*
  - punctatus 19, 25
- ater, Therapon 326
- auctorum, Lobotes 44
- aurantiaca, Diacope 123
- aurantiacus, Lutianus 123
- aurantius, Lutianus 244
- aurata, Perca 298
  - Scolopsis 298
- auratus, Lutianus 298
  - Scolopsides 298
  - Scolopsis 298
- aurea, Pseudochromis 27
- aureovittatus, Lutjanus 130
  - Mesoprion 130, 132
- aureus, Pseudochromis 20, *27*
- auricilla, Arnillo 191
- auritum, Pristipoma 311, 312
- auritus, Pomadasys 311
- aurivittatus, Mesoprion 8
- aurolineata, Caesio chrysozona var 212
- aurolineatus, Mesoprion 129
- auro-lineatus, Mesoprion 129, 132
- aurolineatus, Pristipomoides 212
- Autisthes 325
  - argenteus 325, 329
- axillaris, Caesio 204, *207*
  - Diacope 117, 118
- azuraureus, Caesio 214
- azuror, Caesio 214
- balteatum, Diagramma 263
- balteatus, Plectorhynchus 263
- bancrofti, Terapon 327, *353*
  - Therapon 353
- Bartschina 1, 5, *18*
- bengalensis, Diacope 159
  - Diacopus 159
  - Genyoroge 159, 162
  - Holocentrus 86, 159
  - Lutianus 157, 159
  - Lutjanus 159
  - Mesoprion 159
- benmebari, Priacanthus 71
- bennetti, Dacymba 308
  - Pomadasis 308
  - Pomadasys 308
- Bennettia 87
- bennettii, Pomadasis 308
  - Pomadasys 308
  - Pristipoma 303, 308
- beryciformes, Parapriacanthus *47*
- berycodes, Döderleinia 85
- berycoides, Anthias 85
  - Corusculus 85
  - Döderleinia *85*
  - Etelis 85
  - Eteliscus 85
- bicolor, Malacocanthus 30
- bidens, Genyoroge 170
- bidyana, Acerina (Cernua) 343
  - Terapon 327, *343*
  - Therapon 343
- biguttatus, Lutianus 136
  - Lutjanus 89, 109, *136*
  - Serranus 136
- bilineata, Scolopsis 293
- bilineatum, Scolopsis 293
- bilineatus, Anthias 292
  - Scolopsides 292
  - Scolopsis 272, *292*, *294
- bimaculatus, Scolopsides 285
  - Scolopsis 272, *285*, 297
- binotatus, Coius 324
- bitaeniata, Dampieria 1, 5, **18*
  - Diacope 122, 123
- bitaeniatus, Mesoprion 122
- bleekeri, Mesoprion 136, 137
  - Priacanthus 71
  - Scolopsis 284, 293
- blochii, Cantharus 207
  - Diagramma 263
  - Plectorhynchus 263
  - Priacanthus 71, 75
- Bodian cuvier 244, 246
- Bodianus argenteus 201
  - triourus 44
- Bogota 65
  - infuscata 65
- bohar, Diacope 108
  - Lutianus 107
  - Lutjanus 88, *107*, 108
    - (Mesoprion) 108
  - Mesoprion 108
  - Sciaena 86, 107
- bonariensis, Priacanthus 78

Page

- Boops 65
  - asper 65
- boops, Anthias 65, 77
  - Perca 77
  - Priacanthus 66, 67, 77
- borensis, Diacope 170
  - Mesoprion 170
- bostockii, Therapon 355
- bostonensis, Genyoroge 169
- bottonensis, Diacope 169
  - Genyoroge 169
  - Lutjanus 170, 171
  - Mesoprion 169, 171
- bottoniensis, Genyoroge 169
- bounzetianus, Therapon 333
- boutton, Holocentrus 169
- Bowersia 186, *187*
  - ulaula 186, 192, 193
  - violescens 186, 187, 188
- brachycentrus, Therapon 357
  - (Datnia) 357
- brama, Cantharus 207
- Breviperca 82
  - lineata 82
- brevirostris, Aprion 191
  - Etelis 191
- brevispinis, Datnia 356
  - Therapon 357
- brighami, Apsilus 184
  - Rooseveltia 184
  - Serranus 183, 184
- bulanensis, Scolopsis 276, 277
- bürgeri, Glaucosoma 82, 83
- burukuarem, Scolopsides 275
- butonensis, Lutjanus 173
- caerulaureus, Caesio 203, 204, *213*, 214
  - (Caesio) 214
- caeruleolineata, Lutjanus 154
- caeruleolineatus, Lutjanus 154
  - (Mesoprion) 154
- caeruleo-punctata, Diacope 113
- caeruleopunctata, Genyoroge 112
- caeruleo-punctatus, Lutianus 113, 115
- caeruleovittata, Genyoroge 152
- caeruleovittatus, Diacope 152
  - Lutjanus 89, *152*
- caerulescens, Aphareus 196, 197
- Caesio 200, *203*, 204, 205, 227
  - argenteus 201
  - axillaris 204, *207*
  - azuraureus 214
  - azuror 214
  - caerulaureus 203, 204, *213*, 215
  - (Caesio) caerulaureus 214
  - chrysozona 212
  - chrysozona var. aurolineatus 212
  - chrysozonus 204, *212*
  - coerulaureus 207, 212, 213
  - coeruleo-taeniatus 214
  - cuning 204, *220*
  - cylindricus 202, 203
  - (Caesio) cylindricus 202
  - diagramma 219
  - digramma 204, *219*
  - erythrochilurus 221, 222
  - erythrogaster 203, 220, 222
  - erythropterus 220

Page

- Caesio gymnopterus 200, 201
  - lunaris 204, *205*, 221
  - maculatus 214, 215
  - multiradiatus 202
  - nori 214
  - pinjalo 224, 225
  - pisang 204, *209*, 218
  - striatus 212, 214, 215
  - suevicus 208
  - teres 208
  - tile 202
  - xanthonotus 204, *207*
  - xanthurus 203, *204*
- Caesioninae 200
- calveti, Diacope 117, 118, 174, 175
- cancellata, Datnia 345
  - Scolopsis 283
- cancellatoides, Datnia 348
- cancellatum, Scolopsis 283
- cancellatus, Scolopsides 283
  - Scolopsis 272
  - Terapon 327, *345*, 346*
  - Therapon 345
  - (Datnia) 345
- Cantharus blochii 207
  - brama 207
  - elongatus 308
- Caranxomorus sacrestinus 197
- carbo, Terapon 327, *352*
  - Therapon 352
- carbunculus, Etelis 193, *195*
- caripa, Pristipoma 310
- carolinus, Priacanthus 67, 69
- caroui, Mesoprion 145
- carponotatus, Lutjanus 89, 144
  - Mesoprion 144
- carponotus, Mesoprion 144
- Catalufa 49
  - japonica 51
  - umbra 49, 53
- catalufa, Priacanthus 69
- catus, Coius 91
- caudalis, Lutjanus 117, 170
  - Mesoprion 117, 118, 170, 172
  - Pseudochromis 21, *40*
- caudavittata, Datnia 354
- caudavittatus, Terapon 327, *354*
  - Therapon 355
- caudovittatus, Therapon 355
- cavifrons, Therapon 326
- celebicum, Diagramma 238
- celebicus, Diagramma 238
  - Plectorhinchus 238
  - Plectorhynchus 237, 238
- Centropomus hober 129
- Centropristis filamentosus 192
  - (Aprion) filamentosus 192
  - pristipoma 189
- centurio, Diagramma 263
- cepedianus, Priacanthus 67
- Chaetodon plectorhinchus 258
  - quadrifasciatus 324
- chaetodonoides, Diagramma 258
  - Lutjanus 258
  - Plectorhinchus 231, 234, *257*, 258, *259
  - Plectorhynchus 257, 258

Page
chaetodontoides, Diagramma 258
Chaetopterus 186, 193
  dubius 192
  microchir 185
  microlepis 190
  pristipoma 189
  sieboldii 186, 192
chalybeus, Therapon 348
chirtah, Lutianus, 167
  Lutjanus 167, 168
  (Mesoprion) 167
  Mesoprion 167
chrysobalion, Pristipoma 315
chrysotaenia, Diagramma 237
  Lutianus 163, 165
  Lutjanus 89, *141*, 142
  Mesoprion 141
  Plectorhynchus 237
chrysotenia, Mesoprion 141
chrysozona, Caesio 212
chrysozonus, Caesio 204, *212*
chubbi, Diagramma 257
  Plectorhinchus 234, *257*
  Plectorhynchus 257
Cichla cuning 220
Cichlops 4
  cyclophthalmus 4, 5
  cyclothalma 5
  filamentosus 25
  hellmuthi 6
  hellmuthii 6, 7
  japonicus 5
  melanotaenia 12
    var. altera 13
  spiloptera 6
  spilopterus 6
  trispilos 11
  trispilus 11
ciliata, Scolopsis 300
ciliatu, Scolopsis 300
ciliatus, Holocentrus 300
  Scolopsides 300
  Scolopsis 273, *300*
cincta, Perca 334
cinctum, Diagramma 241
  (Plectorhynchus) 241
cinctus, Plectorhinchus 233, *241*
  Plectorhynchus 233, 241
cinerascens, Diagramma 263
cinereus, Therapon 339
citrinus, Lobotes 44
clvis, Diacope 172
  Genyoroge 172
Clupeolabrus 202
  dubius 202
cobojus, Coius 326
coccinea, Diacope 170
coccinicauda, Malacocanthus 30
coerulaureus, Caesio 207, 212, 213
coeruleo-lineata, Diacope 154
coeruleolineata, Diacope 154
coeruleolineatus, Diacope 154
  Lutianus 157
coeruleopunctata, Genyoroge 112
coeruleo-taeniatus, Caesio 214
Coesia maculatus 214
Coesio lunaris 205
  tile 202

Page
Coius 43, 326
  binotatus 324
  catus 91
  cobojus 326
  datnia 326
  gudjutia 315
  polota 323, 324, 326
  quadrifasciatus 324
  trivittatus 329
collaris, Scolopsides 299
commersoni, Pristipoma 314
commersonii, Labrus 314
  Pomadasys 314, 317
  Pristipoma 312, 314
compressa, Pempheris 53
compressus, Pempheris 50, *53*
  Sparus 53
Cookeolus 65, 66, *77*
coruscans, Etelis 195
Corusculus 85
  berycoides 85
crassilabre, Diagramma 235
crassispina, Plectorhynchus 235
crassispinum, Diagramma 234
crassispinus, Euelatichthys 235
  Plectorhinchus 235
  Plectorhynchus 235
crocro, Pristipoma 303
cruentatus, Labrus 66
  Priacanthus *66*, *68
Ctenoscolopsis 2, 273
cuning, Caesio 204, *220*
  Cichla 220
  Sparus 220, 221
cuvier, Bodian 244, 246
  Plectorhinchus 244
cuvieri, Diagramma 244
  Plectorhynchus 244
  Therapon 360, 361, 362
cuvierii, Therapon 360
cyanotaenia, Pseudochromis 20, *24*
  (Leptochromis) 24
cyclopthalma, Dampieria *5*
cyclophthalmus, Cichlops 4, 5
cyclothalma, Cichlops 5
cylindricus, Caesio 202, 203
  (Caesio) 202
Dacymba 303
  bennetti 308
Dampieria 1, 3, *4*, 5, 18, 19
  bitaeniata 1, 15, **18*
  cyclophthalma *5*
  hellmuthii 6
  lineata 4
  longipinnis 5, *19*
  melanostigma 5, **16*, *17
  melanotaenia 5, *12*, 13, *14, 17
  spiloptera 5, *6*
  trispilos 5, *11*
Datnia 326
  argentea 326, 347
  brevispinis 356
  cancellata 345
  cancellatoides 348
  caudavittata 354
  elliptica 343
  elongata 351
  fasciata 354

Page
Datnia micracanthus 342
    obtusirostris 348
    plumbea 353, 357
    rosenbergii 347
    virgata 339
datnia, Coius 326
Datnioides 43, *323*
    microlepis *323*
    polota 323, *324*
    quadrifasciatus 324
Datnioidinae 323
decemlineata, Diacope 160
decemlineatus, Evoplites 154, 157
decussatus, Lutianus 104
    Lutjanus 88, *104*, 105
dentatus, Apsilus 183
dentex, Lutjanus 189
    Mesoprion 189, 190
Dentex pristipoma 189, 190
Devisina 1, 20, *26*
Diacope 86, 89, *150*, 165
    alboguttata 113
    analis 123
    angulus 152
    annularis 166
    argentimaculata 97
    aurantlaca 123
    axillaris 117, 118
    bengalensis 159
    bitaeniata 122, 123
    bohar 108
    borensis 170
    bottonensis 169
    caeruleo-punctata 113
    caeruleovittatus 152
    calveti 117, 118, 174, 175
    civis 172
    coccinea 170
    coeruleo-lineata 154
    coeruleolineata 154
    coeruleolineatus 154
    decemlineata 160
    duodecim-lineata 153
    duodecim lineata 153
    ehrenbergii 130
    erythrina 167
    flavipes 123
    fulva 162
    fulviflamma 128
    gibba 169
    immaculata 116, 118
    kasmira 158
    lineata 148
    lineolata 144, 146
    macolor 178
    macrolepis 166
    marginata 116
    melanura 170, 171
    metallicus 167
    monostigma 125
    nigra 178, 179
    notata 160
    octolineata 160
    octovittata 160
    quadriguttata 108
    rivulata 111, 114
    rivulina 111
    rosea 170, 171

Page
Diacope rufolineata 150
    sanguinea 165
    sebae 176
    seboe 176
    siamensis 177, 178
    sinal 113
    sparus 189
    spilura 153
    striata 149
    tiea 170
    timoriensis 174, 175
    unicolor 179
    vaigiensis 115
    vitianus 151
    vitta 138
    xanthopus 117, 118
Diacopes 86
Diacopus adetii 167
    bengalensis 159
    superbus 109
    tiea 110
Diagramma 231
    affine 231, 235
    albovittatum 242
    alta 235
    amabile 232
    amicium 232
    aporognathus 230
    balteatum 263
    blochii 263
    celebicum 238
    celebicus 238
    centurio 263
    chaetodonoides 258
    chaetodontoides 258
    chrysotaenia 237
    chubbi 257
    cinctum 241
    (Plectorhynchus) cinctum 241
    cinerascens 263
    crassilabre 235
    crassispinum 234
    cuvieri 244
    durbanense 256
    faetela 237
    flavomaculatum 237
    foetela 237
    (Plectorhynchus) foetela 237
    gaterina 254
    (Plectorhynchus) gaterina 254
    gatherina 254
    gatterina 254
    gibbosus 235
    giganteum 256
    goldmanni 249
    grisea 255
    griseum 255
    (Plectorhynchus) griseum 256
        var. playfairi 256
    haematochir 250
    japonicum 230
    jayakari 256
    kumut 256
    labiosum 263
    lessoni 245
    lessonii 245, 246, 247
    leucurum 234
    lineatum 252, 262

Page

- Diagramma macrolepidotum 241
  - moaiab 263
  - montrouzieri 258
  - multivittata 250, 251
  - nigrum 234
  - obscurum 256
  - orientale 243
  - ornatum 238
  - ouan 240
  - papuense 258
  - pardale 258
  - pardalis 258
  - pertusum 261
  - pica 244
  - picoides 244
  - pictum 260
  - (Plectorhynchus) pictum 261
  - playfairi griseum var 256
  - plectorhynchus 258
  - poecilopterum 263
  - polytaenia 240
  - polytaenioides 240
  - punctata 263
  - punctatissimum 258
  - punctatum 262
  - radja 249
  - reticulatum 256
  - schotaf 255
  - sebae 245
  - shotaf 255
  - sibbaldi 243, 244
  - sordidum 256
  - thunbergii 263
  - umbrinum 232
  - unicolor 235
  - vavad 245
- diagramma, Anthias 231, 262
  - Caesio 219
  - Grammistes 262
  - Perca 244
  - Plectorhinchus 244, 262
  - Plectorhynchus 244, 262
  - Sparus 262
- Diagramella 232
- diagrammus, Plectorhinchus 233, _244_, *246, *247, 262
  - Plectorhynchus 266
- digramma, Caesio 204, _219_
- Djabub 325
- doanei, Plectorhynchus 258, 260
- dodeacanthus, Lutjanus 176
- dodecacanthoides, Lutjanus 175
  - Mesoprion 174
- dodecacanthus, Lutianus 174
  - Lutjanus 174
  - Mesoprion 174
- dodecanthoides, Lutianus 175
  - Mesoprion 145
- dodecanthus, Mesoprion 174
- doderleini, Heterognathodon 274
- Döderleinia 82, _85_
  - berycodes 85
  - berycoides _85_
  - orientalis 85
- Döderleiniinae 82
- dondiava, Mesoprion 129, 132
- dubiosus, Scolopsis 286

Page

- dubius, Chaetopterus 192
  - Clupeolabrus 202
  - Lutjanus 87
  - Priacanthus 70
- duodecim-lineata, Diacope 153
- duodecim lineata, Diacope 153
  - lineatus, Lutjanus _89_, _153_
- duodecimlineatus, Lutianus 153
- durbanense, Diagramma 256
- durbanensis, Plectorhinchus 256
- dussumieri, Pomadasys 321
  - Pristipoma 321
    - (Pomadasys) 321
- ehrenbergi, Lutjanus 130
  - (Mesoprion) 130
  - Mesoprion 130, 132
- ehrenbergii, Diacope 130
  - Lutianus 130, 132
  - Lutjanus (Mesoprion) 130
  - Mesoprion 130
- Elastoma 193
- elliptica, Datnia 343
- ellipticus, Lutjanus 293
  - Terapon 343
  - Therapon 343
- elongata, Datnia 351
  - Pempheris 48
- elongatus, Cantharus 308
  - Mesoprion 136, 137
  - Parapriacanthus 47, _48_
  - Priacanthus 75
  - Scolopsis 301
  - Sparopsis 185
  - Terapon 351
  - Therapon 327, _351_
- elphinstonensis, Therapon 356
- emarginatus, Lobotes 86
- enneacanthus, Mesoprion 139
- enneadactylus, Pomacentrus 298
- Entonanthias pascalus 226
- erate, Lobotes 44
- eriomma, Scolopsis 271, _273_, 274
- erythraea, Pempheris 56
- erythrina, Diacope 167
  - Mesoprion 167
- erythrinus, Mesoprion 167
- erythrochilurus, Caesio 221, 222
- erythrogaster, Caesio 203, 220, 222
  - Odontonectes 221, 224, 225
- erythrognathus, Mesoprion 145
- erythropterus, Caesio 220
  - Lutianus 165
  - Lutjanus 90, 145, _165_, *166
  - Mesoprion 145, 165
- etaape, Mesoprion 160
- Eteles 193
- Etelides 193
- Etelinae 82
- Etelinus 193, 194
- Etelis 82, _193_, 194
  - aquilonaris 193
  - argyrogrammicus 189
  - berycoides 85
  - brevirostris 191
  - carbunculus 193, _195_
  - coruscans 195
  - evurus 195, 196

Page

- Etelis, filamentosus 192, 193
  - marshi 193, *194*
  - oculatus 195
  - zonatus 183
- Eteliscus 85
  - berycoides 85
  - marshi 194
- Euelatichthys crassispinus 235
- Eutherapon 325, 326, *327*
- Evoplites 87, 165
  - decemlineatus 154, 157
- evurus, Etelis 195, 196
- faetela, Diagramma 237
  - Plectorhinchus 233, *237*
  - Sciaena gaterina var 237
- Fares 196
- farkhari, Lobotes 44
- fasciata, Datnia 354
- fasciatus, Therapon 354
- fauvelii, Glaucosoma 83, *84*
- fax, Priacanthus 78
- filamentosus, Anthias 191
  - Aprion 192
  - Centropristis 192
    - (Aprion) 192
  - Cichlops 25
  - Etelis 192, 193
  - Pristipomoides 187, *191*, 192
  - Serranus 191, 193
- flavipes, Diacope 123
  - Lutjanus 88, *123*, *124
- flavipinnis, Labracinus 22
  - Mesoprion 90, 91
  - Pseudochromis 20, *22*
- flaviroseus, Mesoprion 108
- flavivertex, Pseudochromis 20, *37*
- flavivultus, Aphareus 196, 197, 198
    - (Sacrestinus) 197
- flavomaculatum, Diagramma 237
- foetela, Diagramma 237
    - (Plectorhynchus) 237
  - Plectorhinchus 256
  - Plectorhynchus 237
- frenata, Perca 293
  - Scolopsides 292
- frenatus, Scolopsis 272, *292*
- fulgens, Priacanthus 67
- fuliginosus, Terapon 327, *352*
  - Therapon 352
- fulva, Diacope 162
  - Genyoroge 162
  - Perca 162
- fulviflamma, Diacope 128
  - Genyoroge 129
  - Lutianus 128
  - Lutjanus 88, 93, 129, 141, 164
    - var. russellii 130
    - (Mesoprion) 129
  - Mesoprion 128
  - Perca 128
  - Sciaena 128
- fulvus, Holocentrus 162
  - Lutianus 162
  - Lutjanus 89, 162
  - Mesoprion 162
- furcatum, Pomadasys 320
  - Pristipoma 320

Page

- furcatus, Aphareus 196, *197*, 198
  - Grammistes 320
  - Labrus 197
  - Pomadasys 304, *320*
- furvicaudatus, Lutianus 87, 149, 150
    - Lutjanus 141
- fuscescens, Lutianus 131
  - Lutjanus 88, *94*
  - Mesoprion fuscescens 94
- fuscus, Apsilus 182, 183
  - Pseudochromis 20, *28*, 31
    - (Pseudochromis) 28
- gaimardi, Mesoprion 117
- garretti, Mesoprion 99
- Gaterin 231
- gaterina, Diagramma 254
    - (Plectorhynchus) 254
  - Holocentrus 254
  - Plectorhynchus 254
  - Sciaena 231, 254
- gaterinus, Holocentrus 254
  - Plectorhinchus 234, *254*
- gatherina, Diagramma 254
- gatterina, Diagramma 254
- gembra, Alphestes 98
  - Lutjanus 98
  - Mesoprion 98
- Genyoroge 86, 165
  - alboguttata 113
  - amboinensis 151
  - bengalensis 159, 162
  - bidens 170
  - bostonensis 169
  - bottonensis 169
  - bottoniensis 169
  - caeruleopunctata 112
  - caeruleovittata 152
  - civis 172
  - coeruleopunctata 112
  - fulva 162
  - fulviflamma 129
  - gibba 169
  - grammica 160
  - macolor 179
  - marginata 116
  - melanospilos 151
  - melanura 170
  - nigra 179
  - nigricauda 149
  - notata 130, 160
    - var. sexlineata 154
      - sublineata 154, 156
  - octovittata 160
  - quinquelinearis 158
  - rivulata 111, 173
  - rosea 170
  - sebae 176
  - spilura 153
  - unicolor 170, 172
- gerager, Johnius 333
  - Therapon 333
- Ghanam 270
- ghanam, Grammistes 275
  - Holocentrus 275
  - Sciaena 270, 275
  - Scolopsides 275
  - Scolopsis 272, *275*

Page
ghebul, Therapon 329
gibba, Diacope 169
  Genyoroge 169
  Sciaena 86, 168
gibbosus, Diagramma 235
gibbus, Lutianus 168
  Lutjanus 90, *168*, 169
  Mesoprion 169
giganteum, Diagramma 256
Glabrilutjanus 2, 88, *95*
Glaucosoma *82*, 83
  bürgeri 82, 83
  fauvelii 83, *84*
  hebraicum *83*
  scapulare 83, *84*
Glaucosomatinae 82
goldiei, Mesoprion 170
goldmanni, Diagramma 249
  Plectorhinchus 233, *249*, 250
  Plectorhynchus 250
grammica, Genyoroge 160
Grammiste quinquevittato 159
  servus 332
Grammistes diagramma 262
  furcatus 320
  ghanam 275
  kasmira 157
  lineatus 252
  pictus 260
grisea, Diagramma 255
griseoides, Lutjanus 99
  Mesoprion 99
griseum, Diagramma 255
  (Plectorhynchus) 256
griseus, Labrus 86
  Mesoprion 99
  Plectorhynchus 256
grunniens, Anthias 304, 305, 306
  Perca 305
  Pomadasis 305
  Pomadasys 304
guaraca, Pristipoma 306
gudjutia, Coius 315
gulminda, Heterognathodon 274
güntheri, Parapriacanthus 47, *48*
  Pempherichthys 46, 48
guntheri, Pseudohelotes 364
guoraca, Pomadasys 304, *306*
guoraka, Perca 307
  Pomadasis 307
  Pomadasys 307
  Pristipoma 305, 306, 307
Gymnocaesio *200*
  argenteus *201*
  gymnopterus 201
gymnopterus, Caesio 200, 201
  Gymnocaesio 201
  Smaris 201
habbemai, Therapon 342
haematochir, Diagramma 250
  Plectorhynchus 250, 252
Haemulon macrophthalmum 308
hamrur, Anthias 74
  Lutjanus 74
  Priacanthus 66, 71, *74*
  Sciaena 65, 74
hamrurh, Priacanthus 74

Page
Hapalogenis mucronatus 269
  nigripinnis 268
Hapalogenys 200, *267*
  analis 269
  kishinouyei 267, *269*
  maculatus 268
  meyenii *267*
  mucronatus 267, 269
  nigripinnis 267, *268*
  nitens 267, 268
  petersi *267*
hasta, Lutianus 313
  Lutjanus 303, 313
  Pomadasis 314
  Pomadasys 304, *313*, 314
  Pristipoma 312, 313
  (Pomadasys) 314
hebraicum, Glaucosoma *83*
hedleyi, Paracaesio 204
helenae, Mesoprion 87
hellmuthi, Cichlops 6
hellmuthii, Cichlops 6, 7
  Dampieria 6
Helotes 323, *364*
  lorentzi 364, *365*
  polytaenia 359
  sex lineatus 365
  sexlineatus 362, 364, *365*
  6 lineatus 365
helvolus, Priacanthus 71
Hephaestus 325
  tulliensis 325, 352
Hesperanthias 193
Heterognathodon doderleini 274
  gulminda 274
hexagona, Lobotes 324
hilli, Terapon 327, *340*
  Therapon 340
hillii, Therapon 340
Hobar 86
hober, Centropomus 129
holocentrum, Priacanthus 72
Holocentrus bengalensis 86, 159
  boutton 169
  ciliatus 300
  fulvus 162
  gaterina 254
  gaterinus 254
  ghanam 275
  jarbua 330
  katkaya 334
  quadrilineatus 359
  quinquelinearis 158
  quinquelineatus 153, 158
  radjaban 262
  radjabau 231, 261
  schotaf 255
  servus 325, 332
  surinam 44
  surinamensis 43, 44
hoteen, Mesoprion 94
hudsoni, Lutianus 91, 93
humeralis, Terapon 327, *344*
  Therapon 344
Hypoplites 87
idoneus, Therapon 356
immaculata, Diacope 116, 118

Page
immaculatus, Mesoprion 99, 117, 118
incisus, Anomalodon 303, 308
  Pomadasys 304, *308*
incurvus, Lobotes 44
inermis, Mesoprion 87
  Scolopsides 274, 285
  Scolopsis 271, *274*
infuscata, Bogota 65
interruptus, Therapon 345
  (Datnia) 345
itoi, Pempheris 1, 50, *61
jahngarah, Lutianus 99
  Lutjanus 99
janthinuropterus, Mesoprion 149
janthinurus, Mesoprion 170
japonica, Catalufa 51
japonicum, Diagramma 230
  Pristipoma 230
japonicus, Anthias 298
  Cichlops 5
  Lutjanus 298
  Pempheris 51, 58
  Polyprion 77
  Priacanthus 71, 78
  Scolopsis 298
jarbua, Holocentrus 330
  Sciaena 325, 330
  Terapon 326, *330*, *331, *334
  Therapon 331, 339
  (Datnia) 331
jayakari, Diagramma 256
jerbua, Therapon 332
johni, Lutianus 91, 130, 135
  Lutjanus 91
  Mesoprion 130
ohnii, Anthias 87, 90, 93
  Lethrinus 91
  Lutianus 90, 135
  Lutjanus 88, *90*, 131
  Mesoprion 91
Johnius gerager 333
junonis, Priacanthus 78
kagoshimana, Mesoprion 117
kakaan, Pristipoma 315
kasmira, Diacope 158
  Grammistes 157
  Labrus 157
  Lutianus 158
  Lutjanus 89, 152, 153, 154, *157*, 158
  (Genyoroge) 158
  Mesoprion 158
  Sciaena 157
kate, Scolopsides 298
katkaya, Holocentrus 334
kishinouyei, Hapalogenys 267, *269*
klunzingeri, Pempheris 50, *52*
Klunzingerina 1, 21, *33*
kneri, Terapon 327, *341*
  Therapon 341
konekonis, Aprion 185
kumut, Diagramma 256
kurita, Scolopsides 298
kurite, Scolopsides 270
  Scolopsis 298
Kurtus argenteus 53
  macrolepidotus 51
labiosum, Diagramma 263
labiosus, Spilotichthys 263

Page
Labracinus 5
  flavipinnis 22
  melanotaenia 13
  trispilos 11
Labristoma 19
Labrum anthiam 195
Labrus argentatus 98
  commersonii 314
  cruentatus 66
  furcatus 197
  griseus 86
  kasmira 157
  octovittatus 153
lambertoni, Terapon 327, *350
  Therapon 350
latifrons, Sparopsis 184, 185
Leiopotherapon 2, 328, *353*
lemniscatus, Lutianus 135
  Lutjanus 88, *135*
  Serranus 135
lepisurus, Lutianus 108
  Sparus 108
Leptobrama 46, *63*
  mülleri 63, *64*
Leptobraminae 46
Leptochromis 20
Leptoscolopsis 270
  nagasakiensis 270, 271
leroi, Scolopsides 300
lessoni, Diagramma 245
  Plectorhynchus 245
lessonii, Diagramma 245, 246, 247
Lethrinus johnii 91
leucotaenia, Scolopsides 288
  Scolopsis 288
leucotaenioides, Scolopsis 288
leucotaenoides, Scolopsis 288
leucurum, Diagramma 234
  Pristipoma 231
  Pseudopristipoma 231, *234*
limbatus, Serranus 149
lineata, Breviperca 82
  Dampieria 4
  Diacope 148
  Perca 252
lineatum, Diagramma 252, 262
lineatus, Grammistes 252
  Lutianus 99, 149
  Lutjanus 89, 99, *148*
  Mesoprion 148
  Pempheris 63
  Plectorhinchus 233, *252*, *253
  Plectorhynchus 252
  Scolopsides 293
  Scolopsis 275, 283
lineolata, Diacope 144, 146
lineolatus, Lutianus 144, 146
  Lutjanus 89, *144*, 148
  (Mesoprion) 144
  Mesoprion 136, 144
Liocaesio 202
lioglossus, Lutianus 125, 128
  Lutjanus 125
  Mesoprion 125
Liopempheris 49
  affinis 56
  multiradiata 63
  russelli 56

Page

- Liopempheris sasakii 62
  - vanicolensis 58
- Lobotes *43*
  - auctorum 44
  - citrinus 44
  - emarginatus 86
  - erate 44
  - farkhari 44
  - hexagona 324
  - incurvus 44
  - pacificus 43, 44
  - somnolentus 44
  - surinamensis *44*
  - surinamensis var. somnolentus 44
- Lobotidae 43
- longipinnis, Dampieria 15, *19*
- longulus, Scolopsis 272, *288*
  - Therapon 356
- lorentzi, Helotes 364, *365*
- Loxolutjanus 2, 90, *165*
- lunaris, Caesio 204, *205*, 221
  - Coesio 205
- lunulata, Perca 122
- lunulatus, Lutianus 122, 147, 148
  - Lutjanus 88, *122*
    - (Mesoprion) 122
  - Mesoprion 122
- Lutianus 86
  - amboinensis 151
  - annularis 166
  - argentimaculatus 97
  - aurantiacus 123
  - aurantius 244
  - auratus 298
  - bengalensis 157, 159
  - biguttatus 136
  - bohar 107
  - caeruleo-punctatus 113, 115
  - chirtah 167
  - chrysotaenia 163, 165
  - coeruleolineatus 157
  - decussatus 104
  - dodecacanthus 174
  - dodecanthoides 175
  - duodecimlineatus 153
  - ehrenbergii 130, 132
  - erythropterus 165
  - fulviflamma 128
  - fulvus 162
  - furvicaudatus 87, 149, 150
  - fuscescens 131
  - gibbus 168
  - hasta 313
  - hudsoni 91, 93
  - jahngarah 99
  - johni 91, 130, 135
  - johnii 90, 135
  - kasmira 158
  - lemniscatus 135
  - lepisurus 108
  - lineatus 99, 149
  - lineolatus 144, 146
  - lioglossus 125, 128
  - lunulatus 122, 147, 148
  - lutianus 147
  - luzonius 163

Page

- Lutianus madras 147, 148
  - malabaricus 174
  - marginatoides 117
  - marginatus 116
  - max weberi 131
  - melanesiae 131
  - monostigma 125
  - nematophorus 95
  - niger 179
  - nigricauda 149, 150
  - nishikawae 131
  - nouleny 145
  - nukuhivae 108
  - orientalis 142, 143
  - pertusus 261
  - quinquelinearis 153, 158
  - quinquelineatus 131, 142, 153, 157
  - rivulatus 99, 111
  - roseus 99, 100
  - russeli 130
  - russelli 130, 142, 144
  - russellii 130
  - salmonoides 99
  - sebae 177
  - sillacoo 99
  - tahitiensis 170
  - timoriensis 174
  - vaigiensis 115, 150
  - vitta 139
  - waigiensis 115
- lutianus, Lutianus 147
- Lutjanidae 2, *81*
- Lutjaninae 82
- Lutjanus 2, 82, *86*, 89, 136, 179
  - adetii 167
  - amboinensis 151
  - annularis 166
  - argentimaculatus 88, *97*, 171
  - (Mesoprion) argentimaculatus 98
  - aureovittatus 130
  - bengalensis 159
  - biguttatus 89, 109, *136*
  - bohar 88, *107*, 108
  - (Mesoprion) bohar 107
  - bottonensis 170, 171
  - butonensis 173
  - caeruleolineata 154
  - caeruleolineatus 154
  - (Mesoprion) caeruleolineatus 154
  - caeruleovittatus 89, *152*
  - carponotatus 89, *144*
  - caudalis 117, 170
  - chaetodonoides 258
  - chirtah 167, 168
  - (Mesoprion) chirtah 167
  - chrysotaenia 89, *141*, 142
  - decussatus 88, *104*, 105
  - dentex 189
  - dodeacanthus 176
  - dodecacanthoides 175
  - dodecacanthus 174
  - dubius 87
  - duodecim lineatus 89, *153*
  - ehrenbergi 130
  - (Mesoprion) ehrenbergi 130
  - ehrenbergii 130

Page
Lutjanus ellipticus 293
  erythropterus .... 90, 145, _165_, *166
  flavipes .... 88, _123_, *124
  fulviflamma 88, 93, 129, 141, 164
    var. russellii 130
  (Mesoprion) fulviflamma 129
  fulvus .... 89, _162_
  furvicaudatus 141
  fuscescens .... 88, _94_
  gembra 98
  gibbus .... 90, _168_, 169
  griseoides 99
  hamrur 74
  hasta 303, 313
  jahngarah 99
  japonicus 298
  johni 91
  johnii .... 88, _90_, 131
  kasmira .... 89, 152, 153, 154, _157_, 158
  (Genyoroge) kasmira 158
  lemniscatus .... 88, _135_
  lineatus 89, 99, 148
  lineolatus .... 89, _144_, 148
  (Mesoprion) lineolatus 144
  lioglossus 125
  lunulatus .... 88, _122_
  (Mesoprion) lunulatus 122
  lutjanus .... 86, 89, _147_
  luzonius .... 90, _163_
  macolor 180
  macrophthalmus 75
  maculatus 309
  madras 147
  malabaricus .... 90, _174_
  marginatus 116, 122
  (Genyoroge) marginatus 116
  melanotaenia 135
  microstomus 315
  monostigma .... 88, _125_
  nematophorus .... 88, _95_, *96
  niger 179
  nigra 179
  octovittatus 153
  oligolepis 130, 132
  palmeri .... 2, 88, _94_
  paraemulon 87
  pictus 260
  quinquelinearis 158
  quinquelineatus 154, 157
  rangus 98
  rivulatus .... 88, _111_, *112
  roseus 99
  rubens 117
  rufolineatus .... 89, _150_
  russelli 129, 135, 164
  russellii 129, 132
  sebae .... 90, _176_, 177
  semicinctus .... 88, _103_
  sillaoo 99
  sparus 189
  spilurus .... 89, _153_, *155, *156
  unimaculatus 91
  vaigiensis .... 88, _115_, 164
  vitta .... 89, _138_, 139, 148
  vosmaeri 298
  yapilli 91
  zonatus 189

Page
lutjanus, Lutjanus .... 86, 89, _147_
  Mesoprion 147
luzonia, Scolopsis 301, 302
luzonius, Lutianus 163
  Lutjanus .... 90, _163_
Lycogenis 270
  argyrosoma 270, 300
lycogenis, Scolopsides 270, 300
macleayana, Therapon 344
macleayanus, Therapon 344
Macolor 82, 178
  macularis .... 2, 179, _181_
  niger .... _179_
  typus 178, 180
macolor, Diacope 178
  Genyoroge 179
  Lutjanus 180
  Mesoprion 180
macracanthus, Mesoprion 325
  Mesopristes 348
  Priacanthus .... 66, 67, 69, _70_
macrolepidota, Pempheris 51
macrolepidotum, Diagramma 241
macrolepidotus, Kurtus 51
  Pempheris .... 50, _51_
macrolepis, Diacope 166
  Pempheris 63
macrophthalmum, Haemulon 308
  Priacanthus 75
macrophthalmus, Anthias 75
  Lutjanus 75
  Priacanthus 67, 69, 75
  Scolopsis 277
Macrops 193
macropus, Priacanthus 78
macularis, Macolor .... 2, 179, _181_
maculatum, Pomadasys 310
  Pristipoma 309
maculatus, Anthias 309
  Caesio 214, 215
  Coesia 214
  Hapalogenys 268
  Lutjanus 309
  Pomadasis 309
  Pomadasys .... 304, _309_
  Therapon 341, 342
maculosus, Therapon 326
madras, Lutianus 147, 148
  Lutjanus 147
  Mesoprion 147, 148
magnificus, Reganichthys 82, 84
mahogoni, Mesoprion 117
malabarica, Pempheris 51
malabaricus, Lutianus 174
  Lutjanus .... 90, _174_
  Mesoprion 174
  Sparus 92, 174
Malacocanthus bicolor 30
  coccinicauda 30
manadensis, Pomadasys .... 304, _313_
  Pristipoma 313
mangula, Pempheris .... 50, 51, _55_, 56, 57, 58, 60
margaritifer, Scolopsides 277
  Scolopsis .... 272, _277_
margaritiferum, Scolopsis 277
marginata, Diacope 116
  Genyoroge 116

Page

- marginatoides, Lutianus 117
- marginatus, Lutianus 116
  - Lutjanus 116, 122
    - (Genyoroge) 116
- marginipinnis, Mesoprion 117
- marshi, Etelis 193, _194_
  - Eteliscus 194
- mauritianus, Smaris 214
- maus, Mesoprion 99
- max weberi, Lutianus 131
- meeki, Priacanthus 71, 72, 76, 77
- megalops, Rhomboplitoides 87, 144, 145
- melanesiae, Lutianus 131
- melanospilos, Genyoroge 151
  - Mesoprion 151
- melanostigma, Dampieria 5, *_16_, *17
- melanotaenia, Cichlops 12
  - Dampieria 5, _12_, 13, *14, 17
  - Labracinus 13
  - Lutjanus 135
  - Pseudochromis 20, _23_
    - (Leptochromis) 23
- melanura, Diacope 170, 171
  - Genyoroge 170
- Mesoprion 86, 325
  - amboinensis 151
  - analis 123
  - annularis 166
  - aratus 87
  - argenteus 145, 146
  - argentimaculatus 97
  - arnillo 183
  - aureovittatus 130, 132
  - aurivittatus 8
  - aurolineatus 129
  - auro-lineatus 129, 132
  - bengalensis 159
  - bitaeniatus 122
  - bleekeri 136, 137
  - bohar 108
  - borensis 170
  - bottonensis 169, 171
  - caroui 145
  - carponotatus 144
  - carponotus 144
  - caudalis 117, 118, 170, 172
  - chirtah 167
  - chrysotaenia 141
  - chrysotenia 141
  - dentex 189, 190
  - dodecacanthoides 174
  - dodecacanthus 174
  - dodecanthoides 145
  - dodecanthus 174
  - dondiava 129, 132
  - ehrenbergi 130, 132
  - ehrenbergii 130
  - elongatus 136, 137
  - enneacanthus 139
  - erythrina 167
  - erythrinus 167
  - erythrognathus 145
  - erythropterus 145, 165
  - etaape 160
  - flavipinnis 90, 91
  - flaviroseus 108

Page

- Mesoprion fulviflamma 128
  - fulvus 162
  - fuscescens 94
  - gaimardi 117
  - garretti 99
  - gembra 98
  - gibbus 169
  - goldiei 170
  - griseoides 99
  - griseus 99
  - helenae 87
  - hoteen 94
  - immaculatus 99, 117, 118
  - inermis 87
  - janthinuropterus 149
  - janthinurus 170
  - johni 130
  - johnii 91
  - kagoshimana 117
  - kasmira 158
  - lineatus 148
  - lineolatus 136, 144
  - lioglossus 125
  - lunulatus 122
  - lutjanus 147
  - macolor 180
  - macracanthus 325
  - madras 147, 148
  - mahogoni 117
  - malabaricus 174
  - marginipinnis 117
  - maus 99
  - melanospilos 151
  - microchir 185
  - mitchelli 225
  - monostigma 125, 128
  - multidens 189, 190
  - myriaster 113, 114
  - naborer 130
  - nematophorus 95
  - niger 179
  - obscurus 99, 100, 113
  - octolineata 160
  - olivaceus 147, 148
  - ophuyseni 139, 140
  - parvidens 113
  - phaiotaeniatus 139
  - pomacanthus 87, 160
  - quadripunctatus 113
  - quinquelineatus 142, 153, 158
  - rangus 98, 101
  - retrospinis 87
  - rivulatus 112
  - roseigaster 99, 101
  - rubellus 99, 165
  - rubens 117
  - russelli 129
  - russellii 129
  - sebae 177
  - semicinctus 103
  - sexfasciatus 103
  - sillaoo 99
  - sparus 189
  - taeniops 98, 100
  - terubrian 130
  - therapon 105
  - timoriensis 174

Page

- Mesoprion unimaculatus 91
  - vitta 138
  - waigiensis 115
  - xanthopterygius 145
  - yapilli 91, 92, 98
  - yapillii 99
- Mesopristes 327, *340*
  - macracanthus 348
  - plumbeus 341, 357
- metallicus, Diacope 167
- mexicana, Pempheris 54
- mexicanus, Pempheris 50, 54
- meyenii, Hapalogenys *267*
- meyeri, Priacanthus 80
- micracanthus, Datnia 342
  - Terapon 327, *342*
  - Therapon 342
    - (Datnia) 342
- microchir, Chaetopterus 185
  - Mesoprion 185
- microdon, Aprion 187, 192
  - Apsilus 192
  - Platyinius 187, 188
  - Pristipomoides *187*
- microlepis, Aprion 187, 188
  - (Aprion) 190. 191
  - Chaetopterus 190
  - Datnioides *323*
  - Pristipomoides 187, *190*, 191
- microstomus, Lutjanus 315
- Mirolabrichthys 200, *226*
  - tuka *226*, 229
  - waitei 2, 226, *228*
- mitchelli, Mesoprion 225
- mitis, Serrannus 191, 192
- moaiab, Diagramma 263
- moluca, Pempheris 51
- molucca, Pempheris 50, 51, 55, 62
- monogramma, Scolopsides 285, 286
  - Scolopsis 272, *286*
- monogrammus, Scolopsis 287
- monostigma, Diacope 125
  - Lutianus 125
  - Lutjanus 88, *125*
  - Mesoprion 125, 128
- montrouzieri, Diagramma 258
- moorei, Pseudochromis 1, 21, *39*, *40
- mucronata, Pristipoma 269
- mucronatus, Hapalogenis 269
  - Hapalogenys 267, *269*
- mülleri, Leptobrama 63, *64*
  - Pempheris 49, 52, 54, 55
  - Pseudochromis 25
- mullerii, Pempheris 54
- multidens, Anthias 189
  - Mesoprion 189, 190
- multimaculatum, Pomadasys 318
  - Pristipoma 318
- multimaculatus, Pomadasys 304, *318*
- multiradiata, Liopempheris 63
  - Pempheris 49, 63
- multiradiatus, Caesio 202
  - Pempheris 50, *63*
  - Pterocaesio 202
- multivittata, Diagramma 250, 251
- multivittatus, Plectorhynchus 250

Page

- myriaster, Mesoprion 113, 114
- Myripristis refulgens 80
- naborer, Mesoprion 130
- nagasakiensis, Leptoscolopsis 270, 271
- nageb, Pomadasys 315, 317
  - Pristipoma 311, 315, 320
    - argenteum var 312
- Naqua 86
- nasutus, Therapon 348
- natalensis, Pseudochromis 20, *33*
- nebulosum, Onar 20, 29
- nebulosus, Pseudochromis 29
- neilli, Pristipoma 321
- Nematochromis 3, *41*
  - annae *41*
- nematophorus, Lutianus 95
  - Lutjanus 88, *95*, *96
  - Mesoprion 95
- Neomaenis 86, 88, *97*
- Neomesoprion 87
  - unicolor 87, 162, 163
- Neopempheris 63
  - pectoralis 64
  - ramsayi 63, 64
- Nesiotes 20
  - purpurascens 20, 22
- nesogallica, Pempheris 58, 59
- niger, Lutianus 179
  - Lutjanus 179
  - Macolor *179*
  - Mesoprion 179
  - Therapon 343
- nigra, Diacope 178, 179
  - Genyoroge 179
  - Lutjanus 179
  - Sciaena 179
- nigricauda, Genyoroge 149
  - Lutianus 149, 150
- nigripinnis, Hapalogenis 268
  - Hapalogenys 267, *268*
  - Pogonias 268
  - Therapon 339
- nigrorubrum, Pristipoma 303
- nigrovittatus, Pseudochromis 21, *36*
- nigrum, Diagramma 234
  - Pristipoma 234, 236
- nigrus, Plectorhinchus *232, 233, 234, 236
- niphonius, Priacanthus 79, 80
  - (Pseudopriacanthus) 80
  - Pseudopriacanthus *80*
- nishikawae, Lutianus 131
- nitens, Hapalogenys 267, 268
- nitidus, Polotus 303, 315
- nori, Caesio 214
- notata, Diacope 160
  - Genyoroge 130, 160
- nototaenia, Scolopsis 282, 283
- noulcny, Lutianus 145
  - Serranus 144, 145, 146
- novae-hollandiae, Pseudochromis 21, *33*
- nukuhivae, Lutianus 108
- nyctereutes, Pempheris 50, *62*
- obscurum, Diagramma 256
- obscurus, Mesoprion 99, 100, 113
  - Therapon 338
- obtusirostris, Datnia 348

Page

- obtusirostris, Therapon 348
- ocellatum, Plectropoma 78
- octolineata, Diacope 160
  - Mesoprion 160
- octovittata, Diacope 160
  - Genyoroge 160
- octovittatus, Labrus 153
  - Lutjanus 153
- ocularis, Scolopsis 275
- oculatus, Anthias 195
  - Etelis 195
  - Serranus 193, 195
- ocyurus, Plectorhynchus 230, 231
- Odontonectes 203, 204, *220*
  - erythrogaster 221, 224, 225
  - pinjalo 224
- Ogilbyina 1, 5, *18*
- oligolepis, Lutjanus 130, 132
- olivaceum, Pristipoma 307
- olivaceus, Mesoprion 147, 148
  - Pomadasys 304, *307*
  - Pseudochromis 19, 21, *37*
- Onar 20
  - nebulosum 20, 29
- operculare, Pomadasys 317
  - Pristipoma 317
    - (Pomadasys) 317
- opercularis, Pomadasis 317
  - Pomadasys 304, *317*
- ophuyseni, Mesoprion 139, 140
- orientale, Diagramma 243
- orientalis, Acanthocephalus 85
  - Anthias 243
  - Döderleinia 85
  - Lutianus 142, 143
  - Plectorhinchus 233, *243*
  - Plectorhynchus 243
  - Serranus 243
- ornatum, Diagramma 238
- otaitensis, Pempheris 60
- oualensis, Pempheris 50, *59*
- ouan, Diagramma 240
- oxirhynchus, Therapon 363
- oxyrhynchos, Therapon 363
- oxyrhynchus, Pelates 358, *363*
  - Therapon 363
- pacificus, Lobotes 43, 44
- Pagrus 86
- paikeeli, Pristipoma 321
- palmeri, Lutjanus 2, 88, *94*
- palytaenia, Plectorhinchus 240
- panamense, Pristipoma 303
- papuense, Diagramma 258
- Paracaesio 203, *204*
  - hedleyi 204
  - xanthurus 204
- paraemulon, Lutjanus 87
- Parapempheris 46, 47
  - argenteus 47
- Parapriacanthus *46*, 47
  - argenteus 47, *49*
  - beryciformes *47*
  - elongatus 47, *48*
  - güntheri 47, *48*
  - ransonneti *47*, 48
  - unwini 47, *48*, 49
- Parapristipoma 200, *229*, 231

Page

- Parapristipoma trilineatum *229*
- Parascolopsis 270, 271, *273*
  - townsendi 270, 273
- pardale, Diagramma 258
- pardalis, Diagramma 258
- Parkia 87
- parviceps, Terapon 327, *341*
  - Therapon 341
- parvidens, Mesoprion 113
- pascalus, Entonanthias 226
- pasoowa, Priacanthus 75
- paulayi, Plectorhynchus 250, 251
- pavoninus, Serranus 91, 93
- pectinatus Scolopsides 277, 278
  - Scolopsis 277
- pectoralis, Neopempheris 64
- Pelates 2, 323, 358
  - oxyrhynchus 358, *363*
  - quadrilineatus 358, *359*, 362
  - quinquelineatus 358, 359, 362
  - sexlineatus 358, 359, *362*, 365
- Pempherichthys 46, 47
  - güntheri 46, 48
- Pempheridae 1, *45*
- Pempherinae 46
- Pempheris 46, 47, *49*, 50
  - adustus 60
  - affinis 56, 57
  - analis 50, *52*
  - compressa 53
  - compressus 50, *53*
  - elongata 48
  - erythraea 56
  - itoi 1, 50, *61
  - japonicus 51, 58
  - klunzingeri 50, *52*
  - lineatus 63
  - macrolepidota 51
  - macrolepidotus 50, *51*
  - macrolepis 63
  - malabarica 51
  - mangula 50, 51, *55*, 56, 57, 58, 60
  - mexicana 54
  - mexicanus 50, 54
  - moluca 51
  - molucca 50, 51, 55, 62
  - mülleri 49, 52, 54, 55
  - mullerii 54
  - multiradiata 49, 63
  - multiradiatus 50, *63*
  - nesogallica 58, 59
  - nyctereutes 50, *62*
  - otaitensis 60
  - oualensis 50, *59*
  - poeyi 54, 55
  - polio 55
  - rhomboidea 55
  - rhomboideus 56, 57
  - russellii 56
  - sasakii 50, *62*
  - schomburgki 54
  - schreineri 54
  - schewenki 50
  - schwenkii *50*
  - taitensis 60
  - touea 49, 50
  - unwini 48

Page
Pempheris unwinii 48
    vanicolensis 50, 57, *58*, 59
    woodlarkensis 58
Perca arabica 252
    argentata 98
    argentea 339
    aurata 298
    boops 77
    cincta 334
    diagramma 244
    frenata 293
    fulva 162
    fulviflamma 128
    grunniens 305
    guoraka 307
    lineata 252
    lunulata 122
    pertusa 261
    picta 260
    polyzonia 160
    polyzonias 160
    scandens 326
    stridens 319
    trilineata 229
    vittata 160
percoides, Terapon 328, *358*
    Therapon 353, 354
persicus, Pseudochromis 20, 21, *35*
personatus, Scolopsides 281
    Scolopsis 272, 277, *281*
perspicillatus, Pseudochromis 20, *27*
pertusa, Perca 261
pertusum, Diagramma 261
pertusus, Lutianus 261
petersi, Hapalogenys *267*
phaeops, Scolopsides 282
    Scolopsis 272, *282*, 283
phaiotaeniatus, Mesoprion 139
phoeps, Scolopsides 282
pica, Diagramma 244
picoides, Diagramma 244
picta, Perca 260
pictum, Diagramma 260
    (Plectorhynchus) 261
pictus, Grammistes 260
    Lutjanus 260
    Plectorhinchus 234, 236, 255, *260*, 261, *262, *264
    Plectorhynchus 261
    (Diagramma) 261
    Spilotichthys 261
Pinjalo 200, *224*
    pinjalo 225
    typus *224*
pinjalo, Caesio 224, 225
    Odontonectes 224
    Pinjalo 225
pisang, Caesio 204, *209*, 218
Platyinius 186
    amoenus 188
    microdon 187, 188
    sparus 189, 190
playfairii, Diagramma griseum var 256
plebaeius, Scolopsis 271
Plectorhinchinae 200
Plectorhinchus 200, *231*, 233, 237
    affinis 235, 237

Page
Plectorhinchus bovittatus 233, *242*
    celebicus 238
    chactodonoides 231, 234, *257*, 258, *259
    chubbi 234, *257*
    cinctus 233, *241*
    crassispinus 235
    cuvier 244
    diagramma 244, 262
    diagrammus 233, *244*, *246, *247, 262
    durbanensis 256
    faetela 233, *237*
    foetela 256
    gaterinus 234, *254*
    goldmanni 233, *249*, 250
    lineatus 233, *252*, *253
    nigrus *232, 233, 234, 236
    orientalis 233, *243*
    palytaenia 240
    pictus 234, 236, 255, *260*, 261, *262, *264
    polytaenia 233, *240*
    radja 233, *249*
    reticulatus 256
    schotaf 234, *255*
    sebae 245, 249
plectorhinchus, Chaetodon 258
Plectorhincus 231
Plectorhynchus 231
    albovittatus 242
    balteatus 263
    blochii 263
    celebicus 237, 238
    chaetodonoides 257, 258
    chrysotaenia 237
    chubbi 257
    cinctus 241
    crassispina 235
    crassispinus 235
    cuvieri 244
    diagramma 244, 262
    diagrammus 266
    doanei 258, 260
    foetela 237
    gaterina 254
    goldmanni 250
    griseus 256
    haematochir 250, 252
    lessoni 245
    lineatus 252
    multivittatus 250
    ocyurus 230, 231
    orientalis 243
    paulayi 250, 251
    pictus 261
    (Diagramma) pictus 261
    poecilopterus 263
    polytaenioides 240
    punctatus 263
    radja 249
    radjabau 262
    reticulatus 256
    saidae 238
    sebae 245, 246, 247
plectorhynchus, Diagramma 258
Plectropoma ocellatum 78
plumbea, Datnia 353, 357

Page
plumbeus Mesopristes 341, 357
  Terapon 328, *357*
  Therapon 357
    (Datnia) 357
poecilopterum, Diagramma 263
poecilopterus, Plectorhynchus 263
  Priacanthus 73
poeyi, Pempheris 54, 55
Pogonias nigripinnis 268
polio, Pempheris 55
polota, Coius 323, 324, 326
  Datnioides 323, *324*
Polotus 303
  nitidus 303, 315
polyacantha, Pseudograma 3
polyacanthus, Pseudochromis 3
  Pseudogramma *3*
Polycanthus queenslandiae 33
polynemus, Pseudochromis 1, 21, *38
Polyprion japonicus 77
polytaenia, Diagramma 240
  Helotes 359
  Plectorhinchus 233, *240*
polytaenioides, Diagramma 240
  Plectorhynchus 240
polyzonia, Perca 160
polyzonias, Perca 160
pomacanthus, Mesoprion 87, 160
Pomacentrus enneadactylus 298
Pomadasis 303
  argenteus 311
  argyreus 305
  bennetti 308
  bennettii 308
  grunniens 305
  guoraka 307
  hasta 314
  maculatus 309
  opercularis 317
  striatus 321
Pomadasyidae 2, *199*
Pomadasyina 2, *304*
Pomadasys 2, 200, *303*, 304, 308
  argenteus 304, *311*, 316
  argyreus 305
  auritus 311
  bennetti 308
  bennettii 308
  commersonii 314, 317
  dussumieri 321
  furcatum 320
  furcatus 304, *320*
  grunniens 304
  guoraca 304, *306*
  guoraka 307
  hasta 304, *313*, 314
  incisus 304, *308*
  maculatum 310
  maculatus 304, *309*
  manadensis 304, *313*
  multimaculatum 318
  multimaculatus 304, *318*
  nageb 315, 317
  olivaceus 304, *307*
  operculare 317
  opercularis 304, *317*
  punctulatus 321
Pomadasys striatum 319
  striatus 304
  stridens 304, *319*, 320
  taeniophorus 321
  therapon *305*
  violaceus 307
Priacanthidae *64*
Priacanthopsis 49, 50, *54*
Priacanthus *65*, 66
  alalaua 67, 69, 75, 77
  alticlarens 78
  arenatus 66, *69*, 76
  argenteus 67
  benmebari 71
  bleekeri 71
  blochii 71, 75
  bonariensis 78
  boops 66, 67, *77*
  carolinus 67, 69
  catalufa 69
  cepedianus 67
  cruentatus *66*, *68
  dubius 70
  elongatus 75
  fax 78
  fulgens 67
  hamrur 66, 71, *74*
  hamrurh 74
  helvolus 71
  holocentrum 72
  japonicus 71, 78
  junonis 78
  macracanthus 66, 67, 69, *70*
  macrophthalmum 75
  macrophthalmus 67, 69, 75
  macropus 78
  meeki 71, 72, 76, 77
  meyeri 80
  niphonius 79, 80
  (Pseudopriacanthus) niphonius 80
  pasoowa 75
  poecilopterus 73
  refulgens 80
  schlegelii 78
  schmittii 73
  speculum 75
  supraarmatus 78
  tayenus 66, *72*, *73
  ulalaua 75
  velabundus 78
Pristipom 303
Pristipoma 303
  anas 321, 322
  argenteum 311
  argenteum, var. nageb 312
  argyreum 305, 307
  auritum 311, 312
  bennettii 303, 308
  caripa 310
  chrysobalion 315
  commersoni 314
  commersonii 312, 314
  crocro 303
  dussumieri 321
  (Pomadasys) dussumieri 321
  furcatum 320
  guaraca 306

Page

Pristipoma guoraka ... 305, 306, 307
  hasta ... 312, 313
  (Pomadasys) hasta ... 314
  japonicum ... 230
  kakaan ... 315
  leucurum ... 231
  maculatum ... 309
  manadensis ... 313
  mucronata ... 269
  multimaculatum ... 318
  nageb ... 311, 315, 320
  neilli ... 321
  nigrorubrum ... 303
  nigrum ... 234, 236
  olivaceum ... 307
  operculare ... 317
  (Pomadasys) operculare ... 317
  paikeeli ... 321
  panamense ... 303
  punctulatum ... 321
  rogersii ... 308
  ronchus ... 308
  rostratum ... 303
  sexlineatum ... 362
  simmene ... 320
  striatum ... 319
  stridens ... 319
  (Pomadasys) stridens ... 320
  taeniophorus ... 321
  therapon ... 305
  unicolor ... 305
  variegatum ... 303

pristipoma, Aprion ... 187, 189
  Aprion (Aprion) ... 189
  Centropristis (Aprion) ... 189
  Chaetopterus ... 189
  Dentex ... 189, 190

Pristipomoides ... 82, *186*, 187, 190
  argyrogrammicus ... 187, *189*
  aurolineatus ... 212
  filamentosus ... 187, *191*, 192
  microdon ... *187*
  microlepis ... 187, *190*, 191
  sieboldii ... 187, 188, 192
  sparus ... 189
  typus ... 186, 189, 190

Promblys ... 178

Pseudochromidae ... 1, *2*

Pseudochrominae ... 3

Pseudochromis ... 1, 3, *19*, 21, 36
  adustus ... 28
  (Pseudochromis) adustus ... 29
  aurea ... 27
  aureus ... 20, *27*
  caudalis ... 21, *40*
  cyanotaenia ... 20, *24*
  (Leptochromis) cyanotaenia ... 24
  flavipinnis ... 20, *22*
  flavivertex ... 20, *37*
  fuscus ... 20, *28*, 31
  (Pseudochromis) fuscus ... 28
  melanotaenia ... 20, *23*
  (Leptochromis) melanotaenia ... 23
  moorei ... 1, 21, *39*, *40
  mülleri ... 25
  natalensis ... 20, *33*
  nebulosus ... 29
  nigrovittatus ... 21, *36*
  novae-hollandiae ... 21, *33*
  olivaceus ... 19, 21, *37*
  persicus ... 20, 21, *35*
  perspicillatus ... 20, *27*
  polyacanthus ... 3
  polynemus ... 1, 21, **38*
  punctatus ... 20, *25*
  purpurascens ... 20, *22*
  (Pseudochromis) purpurascens ... 22
  quinquedentatus ... 20, *26*
  ransonneti ... 27, 28
  (Pseudochromis) ransonneti ... 27
  rex ... 27, 28
  rodwayi ... 20, *32*
  spencei ... 21, *34*
  splendens ... 1, 21, *35*
  tapeinosoma ... 20, *24*
  (Leptochromis) tapeinosoma ... 24
  tapeinosomus ... 24
  wildii ... 29
  xanthochir ... 20, *30*
  (Pseudochromis) xanthochir ... 30

Pseudograma polyacantha ... 3

Pseudogramma ... *3*
  polyacanthus ... *3*

Pseudogramminae ... 3

Pseudohelotes ... 364
  guntheri ... 364

Pseudoplesiops ... 3, *42*
  typus ... *42*

Pseudoplesiopsinae ... 3

Pseudopriacanthus ... 65, *79*
  niphonius ... *80*

Pseudopristipoma ... 231, 233, *234*
  leucurum ... 231, 234

Pterapon ... 525
  trivittatus ... 325, 333

Pterocaesio ... 200, *202*
  multiradiatus ... 202
  tile ... *202*

punctata, Diagramma ... 263

punctatissimum, Diagramma ... 258

punctatum, Diagramma ... 262

punctatus, Assiculus ... 19, 25
  Plectorhynchus ... 263
  Pseudochromis ... 20, *25*

punctulatum, Pristipoma ... 321

punctulatus, Pomadasys ... 321

purpurascens, Nesiotes ... 20, 22
  Pseudochromis ... 20, *22*
  (Pseudochromis) ... 22

puta, Terapon ... 326, *328*
  Therapon ... 328
  (Datnia) ... 329

quadrifasciatus, Chaetodon ... 324
  Coius ... 324
  Datnioides ... 324

quadriguttata, Diacope ... 108

quadrilineatus, Holocentrus ... 359
  Pelates ... 358, *359*, 362
  Therapon ... 358, 362
  (Pelates) ... 359

Page
4-lineatus, Therapon 359
quadripunctatus, Mesoprion 113
queenslandiae, Polycanthus 33
quinquedentatus, Pseudochromis 20, *26*
quinquelinearis, Genyoroge 158
    Holocentrus 158
    Lutianus 153, 158
    Lutjanus 158
quinquelineatus, Holocentrus 153, 158
    Lutianus 131, 142, 153, 157
    Lutjanus 154, 157
    Mesoprion 142, 153, 158
    Pelates 358, 359, 362
quinquevittato, Grammiste 159
Rabirubia 87
radja, Diagramma 249
    Plectorhinchus 233, *249*
    Plectorhynchus 249
radjaban, Holocentrus 262
radjabau, Holocentrus 231, 261
    Plectorhynchus 262
Raizero 87, 88, 90
ramsayi, Neopempheris 63, 64
rangus, Lutjanus 98
    Mesoprion 98, 101
ransonneti, Parapriacanthus *47*, 48
    Pseudochromis 27, 28
    (Pseudochromis) 27
refulgens, Myripristis 80
    Priacanthus 80
Reganichthys 82
    magnificus 82, 84
reticulatum, Diagramma 256
reticulatus, Plectorhinchus 256
    Plectorhynchus 256
retrospinis, Mesoprion 87
rex, Pseudochromis 27, 28
Rhencus 303
rhomboidea, Pempheris 55
rhomboideus, Pempheris 56, 57
Rhomboplitoides 87
    megalops 87, 144, 145
Rhonciscus 303, 304, *319*
Rhynchopelates 2, 358
richardsoni, Therapon 344
richardsonii, Therapon 343
rivulata, Diacope 111, 114
    Genyoroge 111, 173
rivulatus, Lutianus 99, 111
    Lutjanus 88, *111*, *112
    Mesoprion 112
rivulina, Diacope 111
rodwayi, Pseudochromis 20, *32*
rogersii, Pristipoma 308
romeri, Therapon 352
ronchus, Pristipoma 308
Rooseveltia 183
    aloha 184
    brighami 184
rosea, Diacope 170, 171
    Genyoroge 170
roseigaster, Mesoprion 99, 101
rosenbergii, Datnia 347
    Terapon 327, *347*
    Therapon 347
    (Datnia) 347

Page
roseus, Aphareus 187
    Aprion 187
    Lutianus 99, 100
    Lutjanus 99
rostratum, Pristipoma 303
rubellus, Mesoprion 99, 165
rubens, Lutjanus 117
    Mesoprion 117
rubricatus, Therapon 339
rufolineata, Diacope 150
rufolineatus, Lutjanus 89, *150*
rufus, Serranus 67
rupellii, Scolopsides 299
russeli, Lutianus 130
russelli, Liopempherus 56
    Lutianus 130, 142, 144
    Lutjanus 129, 135, 164
    Mesoprion 129
russellii, Lutianus 130
    Lutjanus 129, 132, 135
        fulviflamma var 130
    Mesoprion 129
    Pempheris 56
rutilans, Aphareus 196, *198*
    (Fares) 198
Sacrestinus 196
sacrestinus, Caranxomorus 197
sagitta, Amblyopus 27
saidae, Plectorhynchus 238
salmonoides, Lutianus 99
Salpa 86
sanguinea, Diacope 165
sasakii, Liopempheris 62
    Pempheris 50, *62*
scandens, Perca 326
scapulare, Glaucosoma 83, *84*
schlegelii, Priacanthus 78
schmittii, Priacanthus 73
schomburgki, Pempheris 54
schotaf, Diagramma 255
    Holocentrus 255
    Plectorhinchus 234, *255*
    Sciaena abumgaterin 255
schreineri, Pempheris 54
schwenki, Pempheris 50
schwenkii, Pempheris *50*
Sciaena abumgaterin 254
    abumgaterin schotaf 255
    argentata 98
    argentea 303, 311
    argentimaculata 97
    bohar 86, 107
    fulviflamma 128
    gaterina 231, 254
        var. faetela 237
    ghanam 270, 275
    gibba 86, 168
    hamrur 65, 74
    jarbua 325, 330
    kasmira 157
    nigra 179
    stridens 319
Scolopsides 270
    auratus 298
    bilineatus 292
    bimaculatus 285

Page

- Scolopsides burukuarem 275
  - cancellatus 283
  - ciliatus 300
  - collaris 299
  - frenatus 292
  - ghanam 275
  - inermis 274, 285
  - kate 298
  - kurita 298
  - kurite 270
  - lerol 300
  - leucotaenia 288
  - lineatus 293
  - lycogenis 270, 300
  - margaritifer 277
  - monogramma 285, 286
  - pectinatus 277, 278
  - personatus 281
  - phaeops 282
  - phoeops 282
  - rupellii 299
  - taeniatus 285
  - taeniopterus 280
  - temporalis 296
  - torquatus 299
  - vosmeri 298
- Scolopsinae 200
- Scolopsis 2, 200, *270*, 272, 275
  - affinis 286
  - argyrosomus 299
  - aurata 298
  - auratus 298
  - bilineata 293
  - bilineatum 293
  - bilineatus 272, *292*, *294
  - bimaculatus 272, *285*, 297
  - bleekeri 284, 293
  - bulanensis 276, 277
  - cancellata 283
  - cancellatum 283
  - cancellatus 272
  - ciliata 300
  - cilatu 300
  - cilatus 273, *300*
  - dubiosus 286
  - elongatus 301
  - eriomma 271, *273*, 274
  - frenatus 272, *292*
  - ghanam 272, *275*
  - inermis 271, *274*
  - japonicus 298
  - kurite 298
  - leucotaenia 288
  - leucotaenioides 288
  - leucotaenoides 288
  - lineatus 275, 283
  - longulus 272, *288*
  - luzonia 301, 302
  - macrophthalmus 277
  - margaritifer 272, *277*
  - margaritiferum 277
  - monogramma 272, *286*
  - monogrammus 287
  - nototaenia 282, 283
  - ocularis 275
  - pectinatus 277

Page

- Scolopsis personatus 272, 277, *281*
  - phaeops 272, *282*, 283
  - plebaeius 271
  - specularis 271
  - taeniatus 285
  - taeniopterus 272, *280*
  - temporalis 272, *296*
  - torquatus 299
  - townsendi 271, *273*, 274
  - trilineata 290
  - trilineatus 272, *290*
  - vosmaeri 298
  - vosmeri 272, *298*
  - xenochrous 272, *276*
- sebae, Diacope 176
  - Diagramma 245
  - Genyoroge 176
  - Lutianus 177
  - Lutjanus 90, *176*, 177
  - Mesoprion 177
  - Plectorbinchus 245, 249
  - Plectorhynchus 245, 246, 247
- seboe, Diacope 176
- semicinctus, Lutjanus 88, *103*
  - Mesoprion 103
- Serranus aculeatus 193
  - argyrogrammicus 189, 190
  - biguttatus 136
  - brighami 183, 184
  - filamentosus 191, 193
  - lemniscatus 135
  - limbatus 149
  - mitis 191, 192
  - nouleny 144, 145, 146
  - oculatus 193, 195
  - orientalis 243
  - pavoninus 91, 93
  - rufus 67
  - telfairii 183
  - vitta 138
  - zonatus 183
- servus, Grammiste 332
  - Holocentrus 325, 332
  - Terapon 333
  - Therapon 332, 336, 337
- sexfasciatus, Mesoprion 103
- sexlineata, Genyoroge notata var 154
- sexlineatum, Pristipoma 362
- sex lineatus, Helotes 365
- sexlineatus, Helotes, 362, 364, *365*
  - Pelates 358, 359, *362*, 365
  - Terapon 364, 365
  - Therapon (Helotes) 365
  - Therapon 362
- 6 lineatus, Helotes 365
- shotaf, Diagramma 255
- siamensis, Diacope 177, 178
- sibbaldi, Diagramma 243, 244
- sieboldii, Aprion 192
  - Chaetopterus 186, 192
  - Pristipomoides 187, 188, 192
  - Ulaula 192
- sillacoo, Lutianus 99
- sillaoo, Lutjanus 99
  - Mesoprion 99
- simmene, Pristipoma 320

Page
sinal, Diacope 113
Smaris gymnopterus 201
  mauritianus 214
somnolentus, Lobotes 44
    surinamensis var 44
sordidum, Diagramma 256
Sparopsis 184
  elongatus 185
  latifrons 184, 185
Sparus compressus 53
  cuning 220, 221
  diagramma 262
  lepisurus 108
  malabaricus 92, 174
  synagris 86
  tranquebaricus 91, 92
  vosmerianus 298
sparus, Diacope 189
  Lutjanus 189
  Mesoprion 189
  Platyinius 189, 190
  Pristipomoides 189
specularis, Scolopsis 271
speculum, Priacanthus 75
spencei, Pseudochromis 21, _34_
spiloptera, Cichlops 6
    Dampieria 5, 6
spilopterus, Cichlops 6
Spilotichthys 231, 234, _260_
  labiosus 263
  pictus 261
spilura, Diacope 153
  Genyoroge 153
spilurus, Lutjanus 89, _153_, *155, *156
spinosior, Therapon 354
splendens, Pseudochromis 1, 21, _35_
squalidus, Therapon 338
striata, Diacope 149
striatum, Pomadasys 319
  Pristipoma 319
striatus, Caesio 212, 214, 215
  Pomadasis 321
  Pomadasys 304
stridens, Perca 319
  Pomadasys 304, _319_, 320
  Pristipoma 319
    (Pomadasys) 320
  Sciaena 319
sublinata, Genyoroge notata var 154, 156
suevicus, Caesio 208
superbus, Diacopus 109
supraarmatus, Priacanthus 78
surinam, Holocentrus 44
surinamensis, Holocentrus 43, 44
  Lobotes _44_
  somnolentus var 44
synagris, Sparus 86
taeniatus, Scolopsides 285
  Scolopsis 285
taeniophorus, Pristipoma 321
taeniops, Mesoprion 98, 100
taeniopterus, Scolopsides 280
  Scolopsis 272, _280_
tahitiensis, Lutianus 170
taitensis, Pempheris 60
tapeinosoma, Pseudochromis 20, _24_
    (Leptochromis) 24

Page
tapeinosomus, Pseudochromis 24
tayenus, Priacanthus 66, _72_, *73
telfairii, Serranus 183
temporalis, Scolopsides 296
  Scolopsis 272, _296_
Terapon 323, _325_, 328
  alligatoris 327, _351_
  argenteus 327, _347_
  bancrofti 327, _353_
  bidyana 327, 343
  cancellatus 327, *346
  carbo 327
  caudavittatus 327, _354_
  ellipticus 343
  elongatus 327, _351_
  fuliginosus 327, _352_
  hilli 327, _340_
  humeralis 327, _344_
  jarbua 326, _330_, *331, 332, *334
  kneri 327, _341_
  lambertoni 327, *350
  micracanthus 327, _342_
  parviceps 327, _341_
  percoides 328, _353_
  plumbeus 328, _357_
  puta 326, _328_
  quadrilineatus 359
  rosenbergii 327, _347_
  servus 333
  sexlineatus 364, 365
  theraps 326, _337_, 338
  timoriensis 333
  truttaceus 356
  unicolor 328, _355_
teres, Caesio 208
terrae-reginae, Therapon 354
terubrian, Mesoprion 130
Therapon 325, 326
  acutirostris 348
  alligatoris 351
  argenteus 327, 341, 347, 358
  (Datnia) argenteus 348
  ater 326
  bancrofti 353
  bidyana 343
  bostockii 355
  bounzetianus 333
  brachycentrus 357
  (Datnia) brachycentrus 357
  brevispinis 357
  cancellatus 345
  (Datnia) cancellatus 345
  carbo 352
  caudavittatus 355
  caudovittatus 355
  cavifrons 326
  chalybeus 348
  cinereus 339
  cuvieri 360, 361, 362
  cuvierii 360
  ellipticus 343
  elongatus 351
  elphinstonensis 356
  fasciatus 354
  fuliginosus 352
  gerager 333
  ghebul 329

Page

- Therapon habbemai 342
  - hilli 340
  - hillii 340
  - humeralis 344
  - idoneus 356
  - interruptus 345
  - (Datnia) interruptus 345
  - jarbua 330
  - (Datnia) jarbua 332
  - jerbua 332
  - kneri 341
  - lambertoni 350
  - longulus 356
  - macleayana 344
  - macleayanus 344
  - maculatus 341, 342
  - maculosus 326
  - micracanthus 342
  - (Datnia) micracanthus 342
  - nasutus 348
  - niger 343
  - nigripinnis 339
  - obscurus 338
  - obtusirostris 348
  - oxirhynchus 363
  - oxyrhynchos 363
  - oxyrhynchus 363
  - parviceps 341
  - percoides 353, 354
  - plumbeus 357
  - (Datnia) plumbeus 357
  - puta 328
  - (Datnia) puta 329
  - quadrilineatus 358, 362
  - (Pelates) quadrilineatus 359
  - 4-lineatus 359
  - richardsoni 344
  - richardsonii 343
  - romeri 352
  - rosenbergii 347
  - (Datnia) rosenbergii 347
  - rubricatus 339
  - servus 332, 336, 337
  - (Helotes) sexlineatus 365
  - sexlineatus 362
  - spinosior 354
  - squalidus 338
  - terrae-reginae 354
  - theraps 325, 337
  - (Datnia) theraps 338
  - transversus 339
  - trimaculatus 342
  - trivittatus 329, 333, 361
  - (Datinia) trivittatus 329
  - truttaceus 356
  - unicola 356
  - unicolor 355
  - virgatus 339
  - xanthurus 359
- therapon, Mesoprion, 105
  - Pomadasys *305*
  - Pristipoma 305
- Teraponidae 2, *322*
- Teraponinae 323
- theraps, Therapon 325, 337
  - (Datnia) 338
- thompsoni, Aphareus 198, 199

Page

- thunbergii, Diagramma 263
- tiea, Diacope 170
  - Diacopus 110
- tile, Caesio 202
  - Coesio 202
  - Pterocaesio *202*
- timoriensis, Diacope 174, 175
  - Lutianus 174
  - Mesoprion 174
  - Terapon 333
- torquatus, Scolopsides 299
  - Scolopsis 299
- touea, Pempheris 49, 50
- townsendi, Parascolopsis 270, 273
  - Scolopsis 271, *273*, 274
- tranquebaricus, Sparus 91, 92
- transversus, Therapon 339
- trilineata, Perca 229
  - Scolopsis 290
- trilineatum, Parapristipoma *229*
- trilineatus, Scolopsis 272, *290*
- trimaculatus, Therapon 242
- triourus, Bodianus 44
- trispilos, Cichlops 11
  - Dampieria 5, *11*
  - Labracinus 11
- trispilus, Cichlops 11
- trivittatus, Coius 329
  - Pterapon 325, 333
  - Therapon 329, 333, 361
    - (Datnia) 329
- Tropidinius 82, *183*
  - zonatus *183*
- truttaceus, Therapon 356
- tuka, Mirolabrichthys *226*, 229
- tulliensis, Hephaestus 325, 352
- tumidus, Vegetichthys 82
- Turdus 86
- typus, Aprion 189
  - Macolor 178, 180
  - Pinjalo *224*
  - Pristipomoides 186, 189, 190
  - Pseudoplesiops *42*
- ulalaua, Priacanthus 75
- Ulaula 186
  - sieboldii 192
- ulaula, Bowersia 186, 192, 193
- umbra, Catalufa 49, 53
- umbrinum, Diagramma 232
- unicola, Therapon 356
- unicolor, Diacope 179
  - Diagramma 235
  - Genyoroge 170, 172
  - Neomesoprion 87, 162, 163
  - Pristipoma 305
  - Therapon 355
- unimaculatus, Lutjanus 91
  - Mesoprion 91
- unwini, Parapriacanthus 47, *48*, 49
  - Pempheris 48
- unwinii, Pempheris 48
- vaigiensis, Diacope 115
  - Lutianus 115, 150
  - Lutjanus 88, *115*, 164
- vanicolensis, Liopempheris 58
  - Pempheris 50, 57, *58*, 59
- variegatum, Pristipoma 303

Page
vavad, Diagramma 245
Vegetichthys 82
tumidus 82
velabundus, Priacanthus 78
Verrugato 43
violascens, Pomadasys 307
violescens, Bowersia 186, 187, 188
virescens, Aprion 184, *185*
(Aprion) 185
virgata, Datnia 339
virgatus Therapon 339
vitianus, Diacope 151
vitta, Diacope 138
Lutianus 139
Lutjanus 89, *138*, 139, 148
Mesoprion 138
Serranus 138
vittata, Perca 160
vosmaeri, Anthias 298
Lutjanus 298
Scolopsis 298
vosmari, Anthias 298
vosmeri, Anthias 270, 298
Scolopsides 298
Scolopsis 272, *298*

Page
vosmerianus, Sparus 298
waigiensis, Lutianus 115
Mesoprion 115
waitei, Mirolabrichthys 2, 226, *228*
wildii, Pseudochromis 29
woodlarkensis, Pempheris 58
xanthochir, Pseudochromis 20, *30*
(Pseudochromis) 30
xanthonotus, Caesio 204, *207*
xanthopterygius, Mesoprion 145
xanthopus, Diacope 117, 118
xanthurus, Caesio 203, *204*
Paracaesio 204
Therapon 359
xenochrous, Scolopsis 272, *276*
yapilli, Lutjanus 91
Mesoprion 91, 92, 98
yapillii, Mesoprion 99
zonatus, Anthias 183, 189
Apsilus 183
Etelis 183
Lutjanus 189
Serranus 183
Tropidinius *183*

SMITHSONIAN INSTITUTION LIBRARIES
3 9088 01421 1676